IRON TRADE REVIEW AND WESTERN MACHINIST

A JOURNAL OF MANUFACTURES, HARDWARE, METALLURGY AND INVENTION.

VOLUME XIX. CLEVELAND, O., JULY 17, 1886. NUMBER 29.

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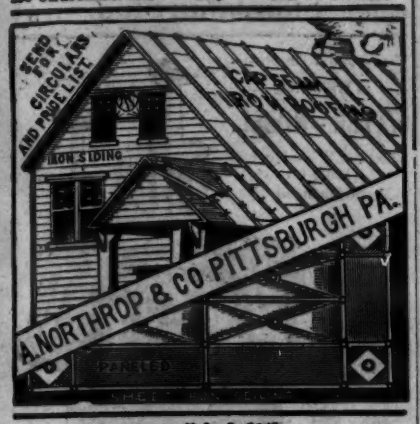

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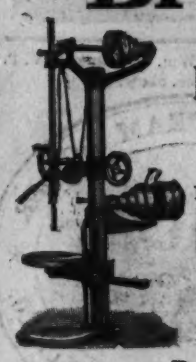

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Patents obtained in the United States and all Foreign countries. 62

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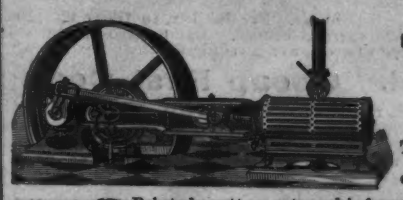

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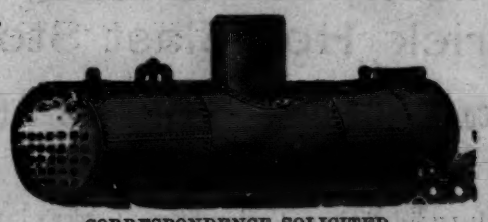

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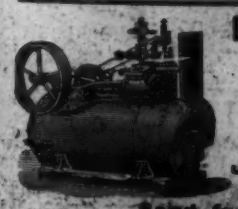

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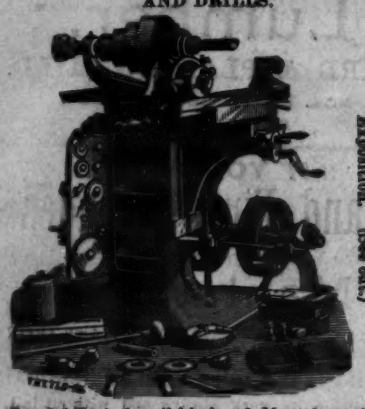

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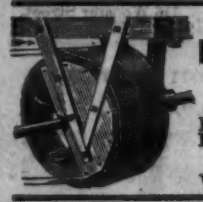

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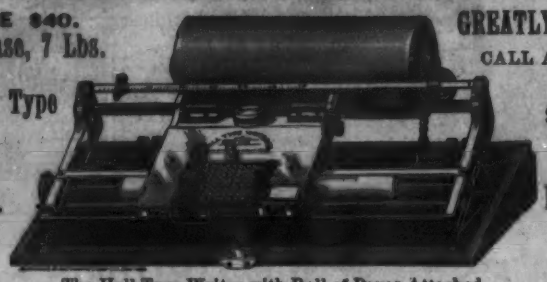

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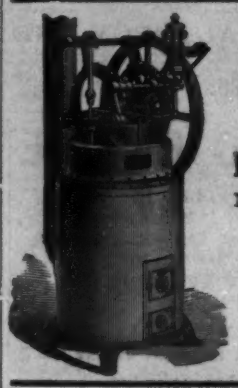

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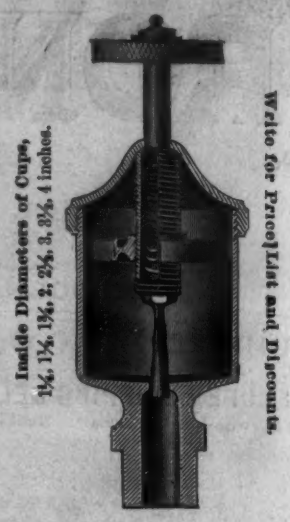

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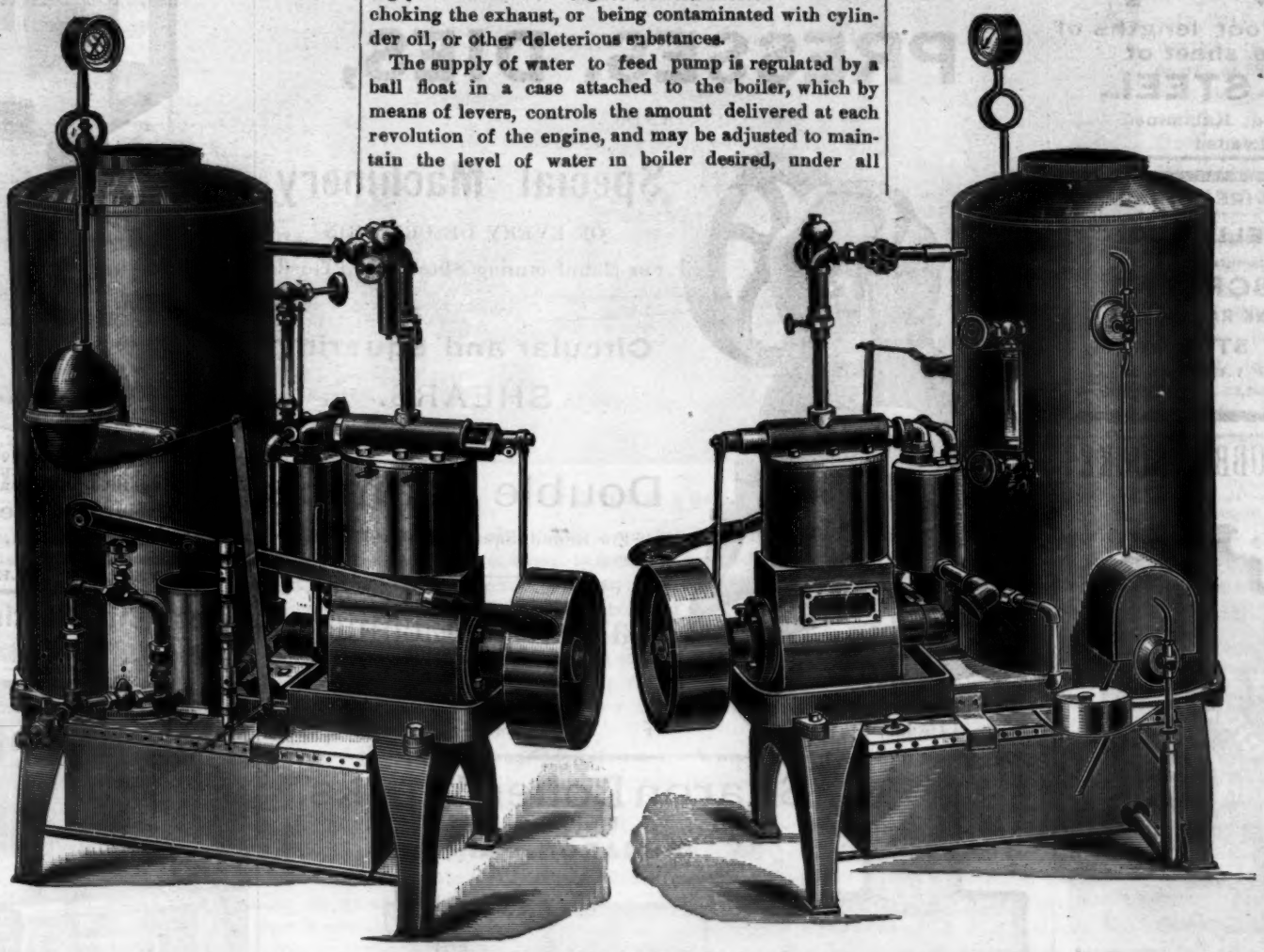
IRON TRADE REVIEW AND WESTERN MACHINIST

VOLUME XIX. CLEVELAND, O., JULY 17, 1886. NUMBER 29.

ACME AUTOMATIC SAFETY ENGINE.

This engine is an upright, double cylinder, single acting, with cranks 180° to each other. The pistons, being 1½ times the stroke in length, form their own guides. The wrist pins are slightly below the center of the pistons, and the steam rings above the wrist pin. The cranks are of steel, of large size, both in diameter and length. The main bearings are 2½ times the diameter of shaft, and are bushed with bronze, which bushings are made on the interchangeable system, and can be renewed when worn at small cost. The cylinders are directly over the center of shaft, so that the engine may be run either way, as may suit the convenience of the purchaser. The valve is of the balanced rocking type, of extra large and long wearing surfaces, and is placed on the top of the cylinders, the valve case forming the cylinder head. This arrangement gives opportunity for long ports, that give quick admission and release, and makes the action of the cut-off governor sensitive to the slightest change in speed or load. The fly-wheel is of cast iron, turned true all over; is perfectly balanced, and has within its periphery the automatic governor, which regulates the admission of steam to suit the varying loads, by changing the throw of the eccentric that actuates the valve. This automatic governor is very simple, consisting of four pieces, and is positive in its action, and peculiarly adapted to a high speed engine, in all places where an even speed is essential. Lubrication is accomplished by carrying in the crank case a mixture of oil and water, into which the cranks dip at every revolution, and are not only flooded themselves, but throw the oil to every part inside the case, the wrist pins on the hollow pistons getting a good supply at each stroke, also the lower part of the cylinders, whence it is wiped by the pistons. As this oil cannot escape, it is used over and over, and the oil supplied to the main bearings is all caught by wipers, and returned to the crank case at last. The eccentric rod strap and bearing, and the outer bearing of the valve stem, are the only bearings not constantly flooded while engine is running.



AUTOMATIC SAFETY ENGINE.

The boiler is of the sectional type, of extra strength; it is a rapid and economical steam generator, and has a very rapid and natural circulation, increased in its rapidity by the intensity of the fire, and all sediment is deposited in the water space below the fire, where it can be readily blown out or removed when boiler is cold. The water being carried in a series of rings, connected by inclined tubes, that break joints, the fire is compelled to reach every part in its passage through them. The boiler is double jacketed to prevent loss of heat by radiation. This boiler was patented June 1, 1886, covering eight claims.

A large ring or dome on the top of the boiler affords an ample supply of well dried steam. The water supply is maintained by a pump worked directly from the main shaft, which forces the water through a coil heater, where it is subjected to the effect of the exhaust steam before entering the water leg of the boiler; by this means the feed water is heated to near or above the boiling point before entering the boiler, without in the least choking the exhaust, or being contaminated with cylinder oil, or other deleterious substances.

The supply of water to feed pump is regulated by a ball float in a case attached to the boiler, which by means of levers, controls the amount delivered at each revolution of the engine, and may be adjusted to maintain the level of water in boiler desired, under all the varying loads to which engine may be subjected.

The fuel is kerosene oil of 110° to 115° fire test (this grade giving the best results), atomized by a steam jet, and controlled by an automatic fire regulator that reduces, or cuts off entirely, the supply of fuel, when the steam pressure reaches the limit at which the regulator is adjusted. The fire gives a most intense flame and heat, is easily controlled, makes more even and constant supply of steam from the same amount of heating surface than any other fuel except natural gas mingled with air, and it is a matter of doubt which of these two gives the hotter flame. The fuel is cleanly, with no dust, ashes or smoke, when the fire is properly adjusted, and cheaper, it is claimed, than hard coal at $4.50 per ton. As it is not subjected to any heat or flame till it enters the fire tube, it is as safe, or rather much safer, than an oil lamp. Four to 4½ gallons of this grade of oil will, in a one-horse power boiler, it is claimed, give a brake horse-power for ten hours, at a cost of about 28 to 35 cents, according to price of oil in the locality where used. These engines are adapted to all purposes where a light power is required, are almost noiseless in their operation, and can be easily managed by any person of ordinary ability. For further particulars address the manufacturers, the Rochester Machine Tool Works, Rochester, N. Y.

INDUSTRIAL GROWTH OF THE SOUTH.

The Baltimore *Manufacturers' Record* in its semi-annual review or the industrial growth of the South shows that during the first six months of 1886 there have been added to the number of manufacturing and mining enterprises in the South, 30 new ice factories, 40 foundries and machine shops, 1 Bessemer steel rail mill, 8 miscellaneous iron works, 3 stove foundries, 15 gas works, 17 electric light companies, 7 agricultural implement factories, 70 mining and quarrying enterprises, 11 carriage and wagon factories, 8 cotton mills, 18 furniture factories, 15 water works 29 tobacco factories, 48 flour mills, 248 lumber mills, including planing mills, sash and door factories, etc., in addition to which there was a large number of miscellaneous enterprises.

The amount of capital including capital stock of incorporated companies represented by the new manufacturing and mining enterprises organized or chartered at the South, and in the enlargement of old plants and rebuilding of mills that were destroyed by fire during the first six months of 1886 aggregates about $63,618,200. The amount in each State as compared with the first six months of last year was as follows:

	1886.	1885.
Alabama	$ 4,808,500	$ 3,580,000
Arkansas	11,428,000	375,000
Florida	981,000	479,000
Georgia	1,399,000	1,580,000
Kentucky	17,220,700	10,621,000
Louisiana	1,202,000	1,407,000
Maryland	5,139,000	4,633,000
Mississippi	457,000	416,000
North Carolina	1,485,200	1,535,000
South Carolina	538,000	427,000
Tennessee	5,297,000	1,802,000
Texas	2,986,000	1,319,000
Virginia	5,553,000	2,008,000
West Virginia	5,123,800	6,352,000
Total	$63,618,200	$36,534,000

THE Gogebic iron district in Michigan is a wonderful one, and the Cleveland IRON TRADE REVIEW is doing good service in calling attention thereto.—[Coal Trade Journal, New York.

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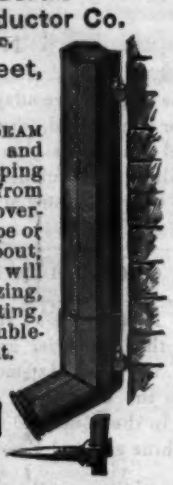

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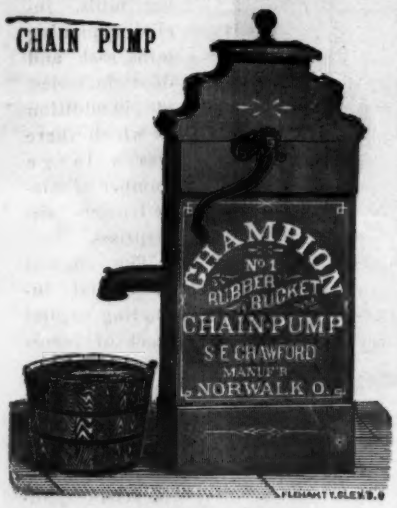

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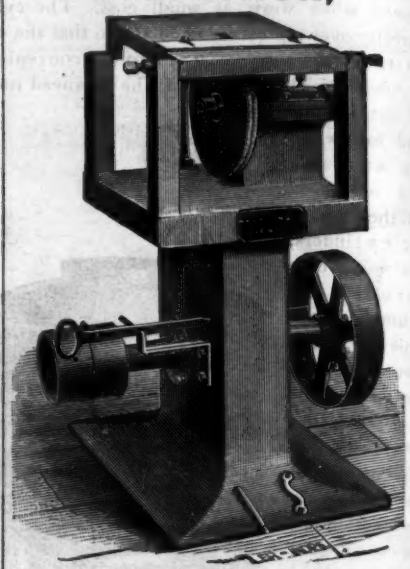

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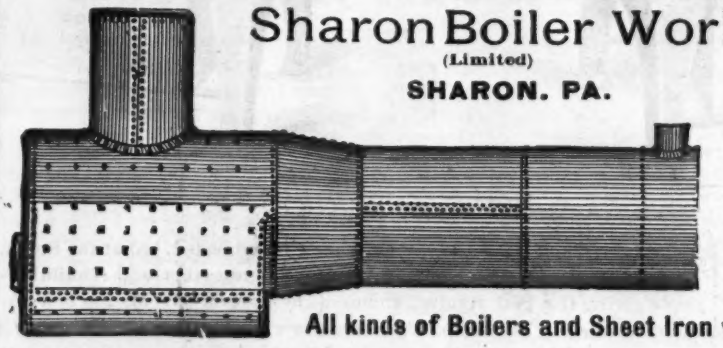

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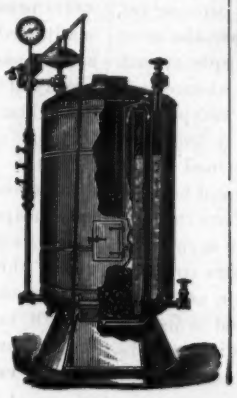
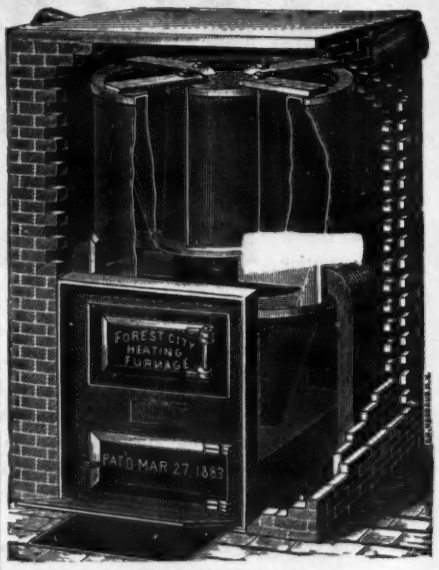
Mount Joy Steam Heating Co.,
MOUNT JOY, PA.



IT IS SELF-FEEDING,
SELF-REGULATING,
SELF-WATER SUPPLYING,
NEEDS NO ENGINEER,
And insures a regular and constant heat day and night.
The oxygen and hydrogen supplying contrivance above the fire saves 35 per cent. of fuel.
Send for Catalogue and Price List. 02
Agents Wanted and Correspondence Solicited.

Forest City Heating Furnace.



A Grand Departure
FROM THE OLD SYSTEMS OF HEATING,
whereby 75 degrees more heat
is obtained with the
Forest City Heating Furnace,
BY COMBINING THE
HOT AIR AND STEAM RADIATOR
IN THE SAME REGISTER.
Manufactured by **F. TYLEE.**
41 West Superior Street,
[On Viaduct] 32 CLEVELAND, O.

THE EQUITABLE GAS MACHINE.

The process of making air gas, herewith illustrated, consists simply in forcing air, by means of an air pump, through the carbureter, where it takes up the requisite amount of hydrocarbon vapor, and thence through the pipes and burners. While this is apparently a small matter, its importance can scarcely be overestimated. The great objection hitherto has been the variable quality of gas made. Defects have been found in the various methods adopted for forcing the air, and in the construction of the carbureter to vaporize the gasoline.

When water is used in the air pump or blower, it must be kept to a certain height; the air coming in contact with the water while passing through the pump, becomes saturated with aqueous vapor, and in cold weather the volume of gas will contract, condense and freeze, causing the lights to become dim and at last die out.

The following defects have also been found in the construction of the carbureter, viz.: The carbureter contains generally from one to ten barrels of gasoline, which is placed in a vault or buried in the ground. It is a well-known fact that by this method a considerable quantity of gasoline is exposed to the process of evaporation; consequently a uniform light cannot be obtained, as the lighter portion of the gasoline will vaporize first, and as the process goes on from day to day, the gasoline becomes more and more dense, until a large portion of it is incapable of evaporation, and has to be thrown away, thereby causing a great waste of gasoline and an unsteady light.

The above defects have been discovered to be great obstacles in the construction of many gas machines. The "Equitable" and "Standard" gas machines are claimed to be free from these defects:

1st. The "Equitable" has a dry blower, which requires no water or any other liquid, and can be exposed to any temperature without fear of freezing or accident from fire.

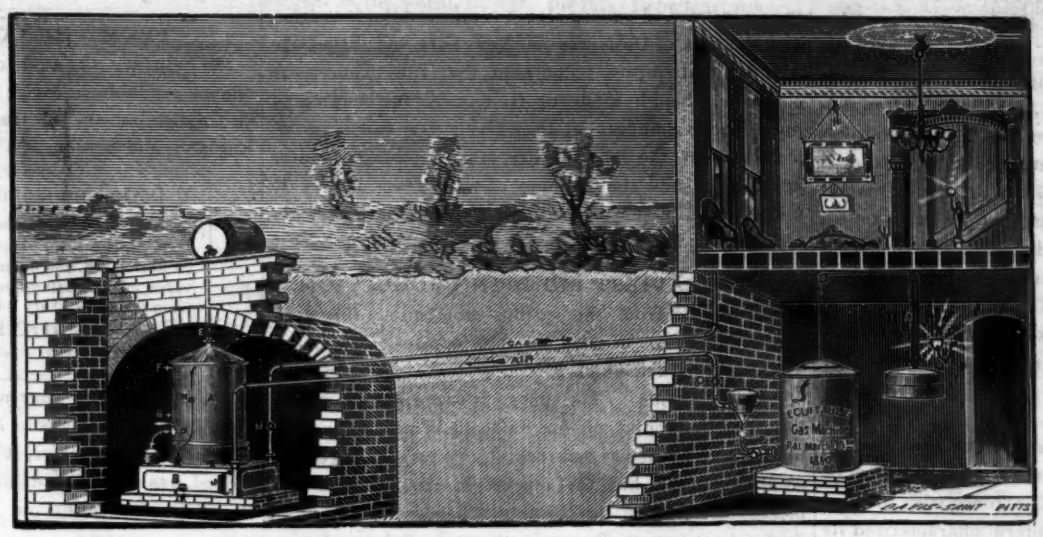
2d. The air which is forced through it is dry and pure; consequently it cannot produce condensation or a dim light.

3d. Its machinery is simple; all parts are in view, so that if any part should wear out it can be seen instantly, and any mechanic can easily repair it.

4th. The carbureter is so constructed that the gasoline is supplied from a reservoir to the evaporating material in the carbureter automatically as fast as used, and in proportion to the quantity of air which passes through the blower. By this method, the body of gasoline is not exposed to the evaporating process, so that the last gallon is of the same gravity as when first poured into the reservoir; hence the lights are always of the same brilliancy.

The reader will see by the accompanying cut that the "Equitable" machine has the carbureter and the oil reservoir located in a vault at a distance from the house. The air pump or blower is located in the cellar, or any other place about the house, and contains no water or liquid of any kind, and at no time does it contain anything but pure fresh air; therefore it can cause no accident from fire or freezing.

Further particulars, prices, etc., can be obtained by addressing the Pittsburgh Supply Co., 105 Wood street, Pittsburgh, Pa.



THE EQUITABLE GAS MACHINE.

Distribution of Tin Plates.

In a paper on "The Origin and Progress of the Manufacture of Tin Plates," read at the recent meeting of the British Association, Mr. Philip W. Flower presented the following table showing the distribution of tinplates for the two years ending December 31, 1884-5:

JANUARY 1 TO DECEMBER 31,

	1884. Boxes.	1885. Boxes.
United States ports	3,472,782	3,776,877
Canada and British North America	356,933	309,465
Mediterraneum and Black Sea	298,142	253,312
Holland, Germany and Betgium	202,198	2.2,732
Norway, Sweden, Baltic	144,549	125,445
China and East Indies	123,324	93,972
France and Switzerland	112,502	100,570
Austratia, Tasmania, New Zealand	106,914	137,918
Spain and Portugal	93,119	93,572
Central and South America	82,111	88,663
West Indies	14,930	12,893
Cape Ceylon and Mauritius	7,763	5,769
Africa and outside Islands	5,465	3,404
Unclassed	272	3,654
Totals	5,12	5,220,556

HOW SOON COULD WE MAKE TIN-PLATES?

The insertion, by Mr. Randall, in his tariff bill of a clause providing a Protective duty on tin-plates brings up the question of our ability to manufacture this product, in the event of the adoption of the proposed duty. That all the raw materials of manufacture are as much within our reach as they are within the reach of British manufacturers is now well understood. We have the iron and the fuel, and we can import the tin as easily as British manufacturers now do. England and Wales produce only a small part of the tin that is used in their tin-plate works. Scotland has undertaken to make tin-plates for us, and yet has not one pound of tin in her borders. How soon, then, could we begin, and how rapidly could we increase, the manufacture of the finished product?

During the year 1885 our imports of tin-plates amounted to 228,596 gross tons. This was the largest annual importation in our history. To-day we are not fully prepared to make any part of this quantity, but we are partly prepared to make a large part of it. We have a present capacity for the production of over 200,000 tons of sheet iron, tin-plates being only sheet iron washed with a solution of tin and lead combined. In 1882 we made our largest annual production of sheet iron, about 130,000 gross tons. This was of various qualities and sizes. The existing sheet mills, which, by the way, are located in nearly a dozen States, could very easily be enlarged to meet an extraordinary demand for their products, so that, in a very little while after this demand would be created, not longer than a year, our capacity of 200,000 tons could be increased to 300,000 tons. One-half of this capacity could be utilized in producing sheet iron for tin-plates, while the other half could be used as it now is, in producing ordinary and polished sheet iron.

That we could within a year's time add to our sheet-iron mills the necessary special facilities for producing all the tin-plates that the country requires may be doubted, but we could certainly make great progress in this direction in the time mentioned. It is fair to assume that within a year after a Protective duty on tin-plates would go into effect, the country would be able to produce one-half of the tin-plates it would need. In the meantime, two things would have happened; first, the warehouses of New York and other importing cities would have been filled with tin-plates, which had been imported before the new duty could go into effect, and in anticipation of it, thus guaranteeing consumers against a short supply and extortionate prices in the immediate future; and second, the temporary enhancement of the price consequent upon the advance in the duty would have had the effect of displacing a large quantity of tin-plates by home-made black and galvanized sheet iron, the market for which for roofing and other purposes has been very greatly curtailed by the cheapness of foreign tin-plates. For this last reason it is not probable that we would, for a few years after the adoption of the new duty, require in any year as many tons of tin-plates as we imported in 1885.

If Mr. Randall's proposed duty were adopted, it is probable that importations of tin-plates would be increased *before* it could go into effect, but that afterwards they would greatly decline, and would steadily decline from year to year, just as our importations of steel rails declined after the country fairly got to work making its own steel rails. Mr. Randall's estimate of the shrinkage in revenue from tin-plates, if his bill could become a law, would not be immediately verified, but it would be more than realized within a very few years.

The price of tin-plates to tinsmiths might go up slightly during the first year or two of the new duty, but afterwards it would fall to its present level, and might go below it. The price could not be advanced more than the increase in the duty from one cent to 2¼ cents per pound. Tinsmiths could not decently advance their prices. What is a cent and a quarter to a tinsmith on a pound of tin-plates? An ordinary coffee-pot does not weigh a pound, nor a gallon milk-pan. The usual effect of the adoption of a Protective duty would be experienced. The duty would simply give the home market to our own people, who would first establish the new industry, and then compete with each other for the market, at the same time vying with each other in the introduction of the most economic methods of manufacture. Tinsmiths would then have no occasion to complain of the price charged them for their tin-plates, while they would have only a good article of manufacture offered them.—[Bulletin American Iron and Steel Association.

STEEL GUNS.

The steel gun craze begins to subside, not only here, but abroad, and the confidence we have so frequently urged in iron is growing in popularity. The bursting of the 43-ton gun on the English gunboat Collingwood, with only 221¼ pounds of cocoa powder, instead of a full charge of 295 pounds, emphasizes the brittleness of steel, and has induced the British Government to order the cruiser Colossus, fitted with two such guns, to cease firing them. Then Mr. Krupp, who started his 16-inch, 120-ton steel guns so enthusiastically in the turrets at Spezzia, was chagrined to find after forty rounds grave defects in the bore, and at the end of the sixty-six rounds the guns in too dangerous a condition to continue at work, and both were condemned at a loss of $360,000. This has been the experience of steel for six years, beginning with the 100-ton gun Armstrong, that burst in 1880 on the Duilio, and will no doubt continue, on account of the variations in temper which are sure to follow the twenty or more parts from which a steel gun is made. Even the last lot of 100-ton guns Armstrong made for the Italian Government have, with their first usage, shrunk where they had been welded so as to let the water used to swab them trickle through, and so have all been condemned.

At Sandy Hook for nearly a year this Government has been at work testing an iron 54-ton gun, and has so far secured 137 successful shots, a triumph of durability no other piece of heavy ordnance, the world around, has stood. Each shot takes 265 pounds of powder, throwing a projectile weighing 800 pounds, and the energy that has been expended by these shots would, aggregated, lift 2,500,000 tons one foot. The effect of this use of seventeen tons of powder, and over fifty tons of projectile is to pucker the upper portion of the chamber, which is to be overcome by fitting a sleeve, and hereafter when the powder gas affects the sleeve, they will be slipped out and another inserted.

These iron guns not only cost one-third less, but being cast in one piece, have a uniform temper, and so bear the strain more successfully than an unequal tempered steel gun. The projectile gets its momentum from the force that gathers to start it, so that a slow-burning powder is the most valuable, and in this the iron gun serves just as well as the steel, for the explosion is against the shot and not the gun. Our Government ought not to dally along, waiting for foreign steel-gun men to complete their experiment. We know we have a success in iron, and so far as the pressing needs of fortification go, we ought to supply what we know will serve, and if ten or twenty years hence science demonstrates a success in steel for heavy ordnance, we can go into the steel with the confidence we now feel in iron. Since the improvements in cast-iron guns some 3,500 have been made and used, and during their fifteen years not one has failed. —[Boston Manufacturers' Gazette.

IRON TRADE REVIEW

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MANUFACTURES, HARDWARE, METALLURGY, INVENTION
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And Special Contributor on Metallurgical Topics.

EASTERN OFFICE, - Room 21. Tribune Building, New York.
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CLEVELAND, O., JULY 17, 1886.

OUR OWN TIN FOR TINPLATE.

Willing, doubtless, to accept the most unfavorable view of the case and yet make out a strong case for tinplate manufacture in the United States, the *Bulletin* of the American Iron and Steel Association, in an article printed elsewhere, proceeds on the assumption that we shall have to import our tin; and in this we would be no better and no worse off than Great Britain. It is not so definitely determined, however, that we have *not* tin in this country, and that in abundance. Little has been heard of late concerning the operations of the Harney Peak Tin Mining, Milling and Manufacturing Company and its mines in the Black Hills, and what little has been given out has pointed rather to the fact that the project had been abandoned as a failure than otherwise.

If we are to believe a correspondent of the Chicago *Inter-Ocean*, however, the long silence on the part of this company has been simply of a piece with the far-seeing wisdom which has heretofore characterized its operations. It has not been dead, nor even sleeping, as its silent and idle works might indicate. Seemingly having abandoned its great enterprise, the company has really been directing surveys of water-courses and quartz and placer-grounds, until it has now secured all the water available and accessory to the tin deposits running from Hill City to Custer, a distance of 18 miles, and nearly six miles in width. It has literally coralled not only the great deposit but the power necessary to its development. Meanwhile the utmost vigilance has been exerted to conceal its property from the public.

A careful personal inspection of all the claims in the Black Hills by the correspondent, aided by the opinion of unprejudiced experts, convinced him that vast deposits of tin had been discovered which would soon be placed on the market. The company above named has evidently proceeded upon this presumption, for its concentrating plant at Etta Camp is said to be the most complete mill in the world, its cost having been $100,000.

Some of the properties viewed by the correspondent were, indeed remarkable. The Missing Link claim, for instance, showed "crystals as large as walnuts and thoroughly permeating the ore." "This marvelous claim," we are told, "is on a five-foot vein of pay ore, and extending to a distance of 4,500 feet." The ore assayed in a crude way showed from 15 to 25 per cent. of tin. On many of the properties shafts have been sunk, and the preparations made seem to point to an active era of mining in the near future.

From a careful perusal of the seven columns of interesting information imparted by the correspondent we are not yet inclined to adopt the general belief that the Harney Peak tin deposit is a pleasing myth. If it proves a reality—and such a reality as indications point to—its effects upon the economic conditions of our country can hardly be estimated. Meanwhile Congress can do no more wisely than to hasten these results by throwing all needed protection about the yet undeveloped tinplate industry.

THE UPWARD DRIFT OF WAGES.

The figures collected by the IRON TRADE REVIEW, during the first half of 1886, show most strikingly the fact that wages have been very generally advanced over what they were at the beginning of the year, and, conversely, that the number of instances wherein reductions in wages have been made is so small as to be insignificant. Here are the results obtained by summarizing our reports for the last six months:

WAGES ADVANCED.

	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Blast furnaces, rolling mills, steel works, etc.	3	9	21	9	6	7	55
Nail works	—	2	2	1	—	37	42
Foundries	1	2	19	81	6	3	112
Miscellaneous iron wks.	—	6	13	11	76	2	108
Total	4	19	55	102	88	49	317

WAGES REDUCED.

	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Blast furnaces, rolling mills, steel works, etc.	3	1	—	—	1	—	5
Nail works	—	4	—	—	—	—	4
Foundries	1	—	—	—	—	—	1
Miscellaneous iron wks.	—	—	—	—	—	1	1
Total	4	5	—	—	1	1	11

It will thus be seen that, of 328 iron-working establishments reported, only 11 made reductions in wages; the remainder, 317, made advances, and this, in a majority of cases, voluntarily. The largest class of iron-working industries advancing wages comprised the foundries, and the bulk of these was in New York and Brooklyn.

It is not attempted to be held that these figures are complete, though made up from a careful conning of numerous exchanges; but they give a very fair approximate view of the labor-history of the past six months and clearly show the tendency of wages, even if they do not report all cases. Certainly they present a very interesting study.

OUR HEAVIEST PIG IRON PRODUCTION.

Our reports from the various iron centers this week contain a mixture of good and bad features. Pittsburgh has a dull market, which is further depressed by inroads of outside brands. Chattanooga is experiencing active inquiries for round lots for Fall and Winter deliveries, but prices continue at bed-rock. A better tone is reported at Cincinnati, but the market is still sensitive and prices uncertain, with, however, a hardening tendency. St. Louis reports an improving market, slightly advancing prices, and, as a whole, an encouraging outlook. At Louisville an even tenor is noted. As will be noticed in another editorial, the Detroit market for Lake Superior charcoal irons is in quite a hopeful condition.

The rate of production of pig iron is now estimated to be greater than ever before in the history of the country. The output at present is 121,650 tons per week, which would indicate an annual production (50 weeks) of 6,082,500 tons, were it not for the smaller rate of production earlier in the year. Most encouraging of all, is the fact that even this very large quantity is being taken care of by the country, few if any furnaces being compelled to stock up. The next move for the better—which, we hope, will not long be deferred—will be a strengthening of prices to a point that will prove more remunerative to furnacemen.

LAKE SUPERIOR CHARCOAL IRONS.

Concerning a matter treated of on our market page last week, we have received the following communication:

To the Editor of the IRON TRADE REVIEW:

We notice in your last issue that a "prominent iron man" of your city is quoted as saying that the iron market here is far below what the actual quotations are that we have given for some time past, particularly Lake Superior charcoal iron. In making a market report, it is a somewhat difficult matter to give correctly what the market is to suit all cases. We propose to quote in our reports what we would do if a man came into our office and asked us a price on iron. Should this same man, however, prove a buyer, and that for a grade of iron on which we were pretty well fixed, we would be inclined, should he want a sharp delivery, to make in particular cases a somewhat lower price. Your "prominent iron man" is wrong in one way, as we have explained above, but right in another, inasmuch as iron is sold below our quotations *slightly*, but these sales are made usually to customers where a considerable quantity is taken, and prompt, or reasonably prompt, deliveries are made. At no time during the present year has the demand for Lake Superior charcoal been so large as it is at present. The malleable men who buy largely are all in the market, with a few exceptions. The wheel business is very active, making an additional demand for that grade of iron. Coupled to this fact is the very early buying of the agricultural implement men at this time, who, instead of waiting until the latter part of August or the first of September, propose to buy in July. There seems to be a little nervousness on the part of buyers to close matters up as quickly as possible, and it really looks as though an advance was anticipated in the near future from all quarters. CHARLES HIMROD & CO.

DETROIT, Mich., July 14, 1886.

Certainly, with this fair understanding, there can be no objections to the figures quoted by our esteemed Detroit correspondents. It should be understood, however, that in quotations for which the IRON TRADE REVIEW is responsible, an earnest effort is made to give figures based on actual transactions. Where failure is made in this respect, it is not through lack of diligent and persistent inquiry on our part.

We are pleased to learn that at no time during the present year has the demand for Lake Superior charcoal iron been so large as it is at present. The reasons given for this encouraging state of affairs are most plausible, and it will not be surprising if prices harden considerably in the near future.

FROM THE OCEAN'S DEPTHS.

On Saturday, the 10th inst., there was received at this office a veritable "message from the sea." It was from an English patron, the Britannia Company, Colchester, England, and bore on the envelope the following card:

> P. O., NEW YORK, N. Y., July 6th, 1886.
>
> This piece is a portion of the mail forwarded from Queenstown, Ireland, per steamer OREGON on March 7th, and damaged by the sinking of that vessel off Fire Island, on March 14th. Recovered from the wreck July 1-4.
>
> HENRY G. PEARSON.
>
> N. Y. P. O. PRINT.

Although nearly four months in the depths of the ocean, and giving signs of having been pretty effectually "cured" in briny water, it was easily decipherable and, indeed, was much less damaged than might be imagined. We shall treasure this old "soaker" as a decided curiosity.

SOFT STEEL IN BOILERS.

Our Manchester (Eng.) correspondent writes of an interesting and important subject as follows:

At a recent meeting of the Liverpool Engineering Society, an interesting paper was read by Mr. Ferber on "Wasting in Marine Boilers," caused by corrosion, which leads the boilers to perform many fantastic actions, which much puzzle engineers. The substitution of mild steel for iron in the construction of boilers was not considered to be an unmixed good, for it is painfully evident that it is more subject to corrosion than iron, which will militate much against its usefulness, for something more is required than strength and ductility; and if length of life is of any account, then resistance to corrosion must form an important item in determining the material to be used for boiler purposes. It was evidently the opinion not only of the reader of the paper, but of a large number of engineers present, that, as regards the vast majority of anti-corrosive fluids, etc., in the market, their novelty generally exceeds their usefulness. Mr. Ferber warmly supported the Bower-Barff rustless process. He mentioned several instances in which iron brackets treated by this process had been in use in marine boilers, and after twelve months' trial had shown no signs of corrosion, although the stays which were attached to them had slightly suffered.

Foreign Favors.

Mr. Herbert Standring, 16 Finsbury street, London, E. C., favors us with a very neat and elaborate tri-colored statistical table prepared by him, showing the condition of the caoutchouc and gutta percha trade of Great Britain. Mr. Standring is proprietor of the *India Rubber, Gutta Percha and Electrical Trades Journal.*

From Capt. F. Petrie, Honorary Secretary, 7 Adelphi Terrace, London, W. C., we have received the interesting proceedings of the annual meeting of the Victoria Institute, or Philosophical Society of Great Britain. From the Secretary's report we learn that this Institute has upwards of 1,100 home, colonial, and American members.

IRON-WORKERS' WAGES.

STRIKES, SETTLEMENTS, ETC., IN JUNE.

A Resume of the Labor Situation in Leading Industrial Centers.

Below we present a *resume* of the various labor troubles, etc., in iron-working establishments during the month of June, 1886:

BLAST FURNACES, ROLLING MILLS AND STEEL WORKS.

Wages have been advanced as follows:

Name of Company.	Department.	Advance.
Penna. Steel Works, Steelton, Pa.	All employes.	10 per cent.
Black Diamond Steel Co., Pittsburgh	" "	" " "
North Chicago Rolling Mill Co.	" "	10 to 15 per cent.
Albany & Rensselaer Iron Works	" "	10 per cent.
Burden Iron W'ks, Troy, N.Y.	" "	10 per cent.
Lebanon (Pa.) furnaces	" "	$1.10 to $1.40 per day.
Newark (N. J.) Steel Works	Laborers.	Not stated.

Strikes have taken place as follows:

Name of Company.	Department.	Cause.
James Rowland & Co., Phila	Rolling mill.	Higher wages refused
Stephen Robbins & Sons, "	" "	" " "
Gaulbert, McFadden & Caskey, Philadelphia	" "	" " "
Hughes & Patterson, Phila	" "	" " "
Marshall Bros. & Co., "	" "	" " "
Burke Iron Co., Birdsboro, Pa.	" "	Material too heavy.
Allentown (Pa.) Rolling Mill	" "	Higher wages refused

NAIL WORKS.

The great nail strike in the West, after continuing over one year, ended June 26. The Mingo, or compromise, scale has been adopted, to continue one year from July 1.

The Tremont Nail Works, New Bedford, Mass., were closed indefinitely, and the employes paid and discharged. It is understood that this action is on account of the unsettled condition of the labor question and the weekly payment law.

MACHINE SHOPS.

The 220 machinists of the Edison Machine Works, New York, who had been on a strike for four weeks for a reduction of time, returned to work on a mutual compromise.

At the Ligerwood Mfg. Co., Brooklyn, N. Y., the wages were raised about ten per cent., and a demand made for nine hours to constitute a day's work.

At the Worthington Pump Works, Brooklyn, N. Y., 250 men went out in a demand for shorter hours; result not stated.

FOUNDRIES.

The following strikes have been settled.

Name of Company.	Address.	Result.
Pioneer Iron Works	Brooklyn, N. Y.	Shorter hrs. & 10 ₱ cent. advance.
Stove companies	Troy, N. Y.	Same wages, pending investigation.
Atlas Iron Works	Brooklyn, N. Y.	20 per cent. advance.
Puritan Iron Foundry.	" "	Compromise.
Clinton Foundry	Troy, N. Y.	Not stated.
Moulders Taunton, Machine Works	Taunton, Mass.	Wages advanced.

Strikes: Burtis & Mann's stove foundry, Troy, N. Y., shut down on a demand for 27 per cent. advance; Abendroth's foundry, Port Chester, N. Y., on account of taking in 75 apprentices.

MISCELLANEOUS IRON WORKS.

The Dayton (O.) Screw Works, have shut down for an indefinite period, discharging 50 men and 150 girls.

The trouble between the workmen of the Pennsylvania Tube Works and the members of the firm was amicably adjusted. All the incompetent men who were hired during the strike are to be discharged.

The strike at the different car shops in Detroit finally ended by the men resuming work at the old wages.

After the cutlers at the Northfield (Mass.) Knife Co. had been out three months for an advance of pay, the company closed the shops indefinitely.

Forty men employed at G. F. Warner & Co.'s hardware manufactory, in New Haven, Conn., went on strike by order of the Knights of Labor, after the firm had refused to arbitrate. The trouble grew out of the discharge of a number of core makers and the refusal of the moulders to use cores made by the foreman.

The workmen employed in the hoe department of the axe works of Hubbard, Bakewell & Co., Beaver Falls, Pa., were notified that a 20 per cent. reduction in wages would be made at once. Overstock and scarcity of orders are the reasons assigned.

Philadelphia boiler manufacturers accepted the boilermakers equalizing scale.

SUMMARY.

	Wages Advanced.	Wages Reduced.	Strikes Settled.	Strikes On.
Blast furnaces, steel works, rolling mills, etc.	7	—	1	7
Nail works	37	—	37	—
Foundries	3	—	8	3
Miscellaneous iron works	2	1	5	4
Total	49	1	41	14
Since January 1	317	10	90	1

The Inventor of Valve Motion.

The invention of the valve motion to a steam engine was made by a mere boy. Newcomen's engine was in a very incomplete condition, from the fact that there was no way to open and close the valve except by means of levers operated by hand. He set up a large engine at one of the mines, and a boy (Humphrey Potter) was hired to work these levers. Although this is not hard work, yet it required his constant attention. As he was working the levers he saw that parts of the engine moved in the right direction, and at the same time he had to open and close the valves. He procured a strong cord and made one end fast to the proper part of the engine, and the other end to the valve lever, and the boy had the satisfaction of seeing the engine move with perfect regularity of motion. A short time after the foreman came around and saw the boy playing marbles at the door. Looking at the engine he saw the ingenuity of the boy, and also the advantage of the invention. The idea suggested by the boy's inventive genius was put in a practical form, and made the steam engine an automatically working machine.

Fine Ore From Florida.

One of the best of the new ores that are attracting attention in the South comes from Florida, a state to which very few would have ever looked for such a commodity. It is a brown hematite, and is said to lie so that it can be worked profitably. The location need not be the best in the world, though, for this to be true, for its qualities would outweigh a good deal of inconvenience. It may be questioned if any other ore has been found in the South that invites steel making as this does. Mr. Alfred T. Brainard, analytical chemist, of Birmingham, Ala., gives the following figures on a generous specimen that he has had:

Iron	57.730
Silica	1.810
Phosphorus	0.004

Pushing the Manufacture of Aluminium.

The American Aluminium Co., of Detroit, has been incorporated. It is organized to mine, smelt and manufacture aluminium or any of its alloys in any State or Territory of the United States, or in any foreign country. The corporation has a paid in capital stock of $2,500,000, the machinery being valued at $3,000, and the patents at $2,497,000. The stock is divided into 200,000 shares of $25 each, held as follows: John W. Smith, Pontiac, and Frederick J. Seymour, Findlay, O., each 47,500 shares; Wm. L. Webber, East Saginaw; Sanford Keeler, East Saginaw; Harry A. Conant, Monroe; C. Stuart Draper, of Pontiac, each 1,000 shares. The seven gentlemen named constitute the first board of directors.

Fire Losses for Six Months.

The New York *Commercial Bulletin* estimates the fire loss in the United States and Canada from January 1 to June 30 at $53,900,000, which is $3,000,000 in excess of the corresponding period last year. This is at the rate of $107,800,000 for the current year, if kept up to the end of the year. There were 999 fires whose reported loss was from $10,000 to $1,000,000, and there were eighty-two fires whose aggregate destructiveness exceeded $21,500,000, or 40 per cent. of the entire fire-waste of the half-year. The *Bulletin* thinks that a "coroner's inquest" into the origin of all fires throughout the country would have a good effect in checking incendiarism and carelessness, which cause at least two-thirds of all these fires.

The Corrosion of Boilers.

MM. Klein and A. Berg have been studying the action of sugars on the corrosion of boilers, and find that sugar in water has an acid reaction on iron, which dissolves it, with a disengagement of hydrogen. The quantity of iron dissolved increases with the proportion of sugar in the water. The salt of iron formed is the acetate. A neutral decoction of malt also corrodes iron with disengagement of hydrogen; but glycerine and mannite are without action on the metal. These results are worthy of note in sugar refineries and places where sugar sometimes finds its way into the boilers by means of the water supplied. The experimenters in question also find that zinc is strongly attacked by sugar; copper, lead, tin, and aluminium are not attacked.

Steel Rail Market.

The *Iron Age* says: We are reported sales aggregating about 10,000 tons to Eastern reilroads at previous terms, and there are rumors of sales of about 10,000 tons more. The allotment has been increased to 1,400,000 gross tons. There are a number of negotiations on foot for foreign rails, chiefly for delivery at Gulf ports, the figure to be met being about $38. We continue to quote $34@35, according to size of order, time of delivery, &c.

The Roots Blower for Cupola Use.

High commendation from an authoritative source is contained in the following letter from Mr. George G. Lobdell, President of the Lobdell Car Wheel Co., Wilmington, Del.:

WILMINGTON, Del., July 6, 1886.

To whom it may concern:

This is to certify that we have used the Roots Blower for many years, and we believe that they are the best form of blower for a cupola that is in use. They make a more uniform blast than any other kind we have used, and take less power. We are successfully blowing a charcoal furnace with an old No. 6 Roots blower, the furnace being 32 feet high, with a bosh eight and one-half feet high. We find the blast very uniform, and the furnace works well.

We also have in use at our car wheel foundry a No. 6 Roots blower and engine on same bed-plate, of recent form with iron rolls. It gives entire satisfaction, and produces a more uniform blast with less power than any other blower we have used. Respectfully,

GEO. G. LOBDELL, Pres't.

For Business Men.

The Detroit & Cleveland Steam Navigation Co. are very anxious to make their Saturday and Sunday night trips—that is, leaving Cleveland Saturday night, returning Sunday night, arriving at Cleveland Monday morning, fare for the round trip, only $2.50—as popular as possible. A feature of these trips is the fact that business men can leave Cleveland Saturday night, and spend all day Sunday in Detroit, or on the Detroit river, and return, arriving at Cleveland Monday morning in season for business.

A Serviceable Type-writer.

The Hall Type-writer is rapidly coming into use among business and professional men. It is light, compact and easily managed, gives a clear impression, and is easily adapted to any kind of type. Messrs. Payne & Pratt, 117 Public Square, are the Cleveland agents.

THE *Railway Age* estimates the number of miles of new railroad track which will be constructed in this country this year at 6,000. The mileage of 1885 was only 3,200 miles according to the *Railway Age*, and 3,000 according to Mr. Poor. Undoubtedly we shall build more miles of railroad this year than last year, but the estimate of our contemporary seems to us to be too high by a thousand miles.—[Bulletin.

AMERICAN locomotive makers have a reputation throughout the world, and the American bridge builders are now coming in for glory. A New South Wales expert on bridge building says the whole secret of the success of American competition is this: "In England there is an absence of system from first to last, while in America bridge building has been reduced to a system worked out on sound scientific and commercial principles."

SIR I. LOWTHIAN BELL told the English Royal Commission on Trade Depression that he knew iron manufacturers in America who averaged from 30 to 120 per cent. profit per annum, and that this accounted in large part for the volume of money thrown into iron making. He shows how American makers increased production 6½ times in 30 years, while in England the increase was only 2⅔.

THE Gogebic Iron Syndicate filed articles of incorporation with the register of deeds at Milwaukee last week Thursday. The capital stock is $5,000,000, divided into 200,000 shares, of $25 each. The incorporators are N. D. Moore, H. S. Benjamin, F. A. Bates, W. J. Turner, and H. H. Walters.

AN agreement to submit to arbitration, with a stipulation for an award and a judgment thereon, will not operate to discontinue a pending suit, according to the decision of the Supreme Court of Michigan in the case of Callinan vs. The Port Huron & Northwestern Railway Company.

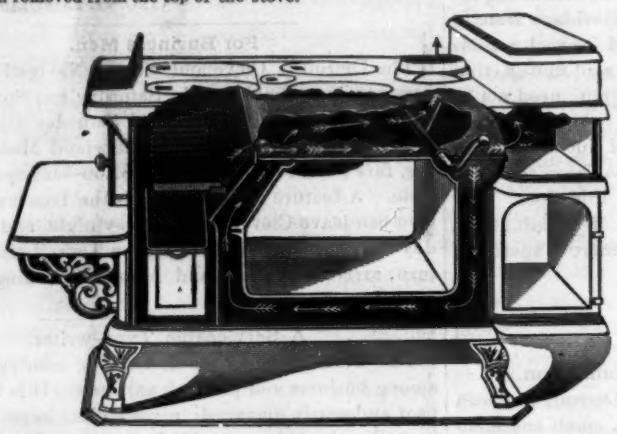
THE iron ore mines at Santiago de Cuba, owned by citizens of the United States, are still in process of development. New material for perfecting the means of transportation to the seaboard has recently been shipped to Cuba.

THE strong point in which the "Davis" has fought and won so many battles, is the "Vertical Feed"—an improvement used on no other sewing machine.—[Adv.

CLIMAX COOK,

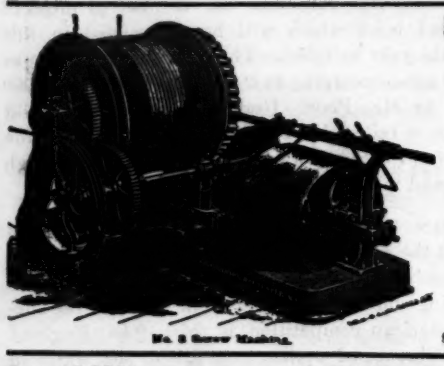
For Soft Coal

Is in every particular a cooking stove of the first-class. The proportions, size, style and finish are second to none. It is constructed with our Patent Oven Flues, which are far superior to the old return flue in general use. The Reservoir is of Nickeled Copper, with deep stamped pit, and is effectually heated without an extra damper. Side Shelves for the top can be put on when required. A cast Pan attached to a swing bracket under the hearth, provides a neat receptacle for the stove covers when removed from the top of the stove.



The above print will illustrate the peculiar flue in our Climax Cook Stoves. This plan insures the even distribution of the heat to all parts of the oven. No other stove or range has this flue.

Taplin, Rice & Co. MANUFACTURERS. **AKRON, O.**



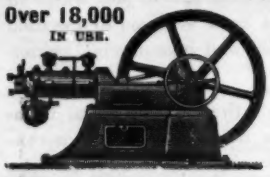
No. 8 Screw Machine.

Freight and Passenger

Elevators.

L. S. GRAVES & SON,
Cor. Center and Frank Streets,
Rochester, N. Y.
New York Office, 46 Cortland Street.
Send for our Catalogue.

Over 18,000 IN USE.



OTTO GAS ENGINE WORKS.

Schleicher, Schumm & Co., { Philadelphia. Chicago.

TWIN ENGINES, ENGINES and PUMPS COMBINED.

Sizes: 1 to 25 indicated horse power.

Guaranteed to consume 25 to 75 per cent. less Gas than **ANY** other Gas Engine Per brake Horse Power

---

The Neptune and Posidon Injectors

None more Reliable.
None Easier to take Apart.
None Cheaper.
Will work either under pressure or Lift.

Can be Adjusted over 60 per cent,
Will work under very low as well as high pressure.
For further particulars and prices Address

MARTY & WING, 20 Blackstone Building,
CLEVELAND, OHIO.

THE BUCKEYE AUTOMATIC ENGINE

Highest Economy. Best Regulation. Superior Construction.

These engines are constructed for heavy and continuous duty, at medium or high rotary speeds.
Illustrated Catalogue sent free.

Address **Buckeye Engine Co.,** SALEM, OHIO
—OR—
W. L. SIMPSON, Eastern Sales Agent, 70 Astor House, N. Y.

N.W. Robinson, cor. Chicago Sales Agent. **Clinton & Jackson-sts., Chicago, Ill.**

HAMILTON WORKS.

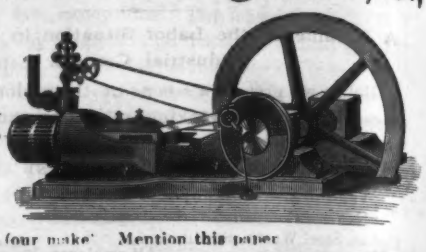
William Tod & Co., Youngstown, O.,

SOLE BUILDERS OF THE

Porter - Hamilton Engine,

50 to 500 H. P. Modern Design.

PLAIN, STRONG, EFFECTIVE, ECONOMICAL. COST LESS THAN ANY OTHER FIRST-CLASS ENGINE.



Blast Furnace Engines on hand.

Prices and Description on application.
Also a stock of other Engines (our make). Mention this paper.

SYKES IRON ROOFING CO., NILES, O.

CRIMPED

SYKES' IMPROVED
Best Roof in the World.
Suitable for all classes of Buildings.
Easy Put On.

All my Iron is Re-Rolled and Box Annealed, well Painted on both sides with Best of Paint and Pure Linseed Oil.

CORRUGATED

Send for Circular and Price List, and mention this Paper. 42

THE SCIENTIFIC PORTABLE FORGE

AND

BLACKSMITH HAND BLOWERS.

GUARANTEED

The Lightest Running! The Strongest Blast! The Most Durable!

ADAPTED TO ALL KINDS OF WORK,

Send for Catalogue! **AND MADE IN STYLES AND SIZES TO SUIT.**

THE FOOS MANUFACTURING CO., - - Springfield, Ohio.

HERCULES POWDER

HERCULES,
THE GREAT STUMP AND ROCK
ANNIHILATOR.

SEND FOR DESCRIPTIVE PAMPHLET

Stump before a blast. | Fragments after a blast.

STRONGEST and SAFEST EXPLOSIVE

Known to the Arts.

POWDER, FUSE, CAPS,

Electric Mining Goods,

AND ALL TOOLS FOR STUMP BLASTING,
FOR SALE BY THE
HERCULES POWDER COMPANY,
40 Prospect street, Cleveland, Ohio.
J. W. WILLARD, Manager.

The McCoy Manufacturing Co.

Manufacturers of **McCoy's Patent Clips, and Wagon, Farm and Street Car Double Trees and Neck Yokes.** Also, **Combined Triple and Double Tree.**

Write for Circular and Price List. Mention this paper. [1] INDIANAPOLIS, IND.

J. STEVENS & CO.,

P. O. BOX 25
Chicopee Falls, - Mass.,
MANUFACTURERS OF

Spring Caliper and Dividers,

FINE MACHINIST TOOLS AND FIRE ARMS.

Our SHOOTING GALLERY RIFLE
IS THE FAVORITE EVERYWHERE.

SEND FOR ILLUSTRATED CATALOGUE.

Industrial Notes

IRON AND STEEL WORKS.

Blast Furnaces.

*** THE Bloomsburg Iron Co., of Bloomsburg, Pa., recently blew out its No. 2 furnace, which had been 6½ years in continuous blast.

*** THE Girard (O.) Iron Co.'s furnace has made 61,000 tons of iron since March 10, 1885 to July 1, 1886. This is the largest output that the furnace has ever made.

*** THE Bellaire Furnace (in the Ohio Valley), which has been out of blast some six weeks, rebuilding, is rapidly approaching completion, the proprietors expecting to blow in about August 1. This furnace has made some remarkable records in reduction of fuel consumption while using iron stoves.

Rolling Mills, Nail Mills, etc.

*** THE rolling mill at Bellaire, O., is shut down for the introduction of soaking pits.

*** THE rolling mill of the Peck, Stowe & Wilcox Co., Birmingham, Conn., has been shut down permanently.

*** THE rolling mill of the Reading Iron Works has been closed probably for about six weeks, during which a new engine of increased horse power will be put in. Nearly 60,000 bricks will be used to construct the foundatiou. Other improvements will also be made during the stoppage.

*** NEGOTIATIONS are pending between the Mahoning Valley Iron Co., of Youngstown, and Cleveland, Brown & Co., of Cleveland, owners of the Russia mill at Niles, for a lease of the plant. They desire to lease it for making sheet iron, having more orders than they can fill with the present capacity at their mills at Youngstown.

*** PETER REAMER, President of the Hoff, Reamer & Adam Manufacturing Co., of Cincinnati, on the 2d inst., signed a contract with Thomas H. Caruthers, representing the Volta Iron Co., Apollo, Pa., for 600 tons of 28 sheet steel to be sent to Cincinnati for the manufacture of coal buckets. Mr. Reamer is also figuring on the purchase of steel sufficient to make lugs for 30,000 dozen of coal shovels.

*** THE Falcon Iron and Nail Co., Niles, O., are making some expensive improvements at their mill this week. The stacks of five of the puddling furnaces are being taken down, and brick taking place of the iron stacks which have been doing service in the past. The size of the furnaces is being changed. a new metal track is being put down, new squeezers are being put in and the entire mill receiving every needed attention to put it in first-class order for starting up again.

Machine Shops.

*** THE Eddy Valve Co., Waterford, N. Y., report trade fair. They are employing from 70 to 80 men.

*** MEECH & Co., of Cleveland, have just shipped a complete plant of mining machinery to the Tintic District, Utah.

*** FORBES & CURTISS, Bridgeport, Conn., are about to build a new shop, so as to get all the work on one floor. It will be 135x135 feet, with extensions for office and boiler house.

*** THE Sullivan Machine Co., Claremount, N. H., are making some ten different sizes of their new heading drill, or "Underground Prospecting Drill." This new invention is of great importance in mining operations, as it obviates the necessity of using heavier machinery in prospecting work, before proceeding to deep cutting with more powerful drills. The demand for these heading drills from mining localities has given quite an impetus to the business of the Sullivan Co., in addition to the regular manufacture of their diamond drill quarrying machines, of which they possess exclusive control and right of manufacture.

Foundries.

*** THE columns for the new G Furnace of the Edgar Thomson Steel Works are being cast at the foundry of L. H. Morris. They are 8 in number and weigh 6 tons each.—[American Manufacturer, Pittsburgh.

*** THE Fisher Foundry and Machine Co., Pittsburgh, have just completed two hydraulic presses, one of 65 tons, the other of 125 tons capacity, to be used by the National Tube Works for straightening pipe up to 24 inches in diameter. Also one hydraulic testing machine of 60 tons inside capacity, for the same company. The work is done to Mr. Patterson's own design. This work is of an entirely new kind for this company, and is found to be fully satisfactory. They have also put up and tested a gear molding machine, Mr. Patterson's patent, manufactured by the North Star Iron Works, of Minneapolis, Minn. This is the only machine of this pattern in the East, and the Fisher Company are made sole agents for it for Western Pennsylvania.—[American Manufacturer.

CHANCES FOR CONTRACTS.

New Enterprises, Extensions, etc.

IRON AND STEEL.

*** STACKS 3 and 4 of the Allentown (Pa.) Iron Works are being remodeled.

*** IGUEZ, FAUZ & C. I. STEPHESON are working up a $50,000 blast furnace at Knoxville, Tenn.

*** THE contract for the remodeling of the Edith furnace, in Manchester, Pa., has been let to James P. Witherow, of Pittsburgh, and is to be completed in five or six weeks. Mr. Witherow has also contracted with the Mary Pratt Furnace Company, of Birmingham, Ala., for the remodeling of the furnace.

*** MESSRS. Park Bros. & Co., Pittsburgh, have decided to begin the erection, at an early date, of a blast furnace of most modern construction. The furnace will be built on Herr's Island, in the Allegheny river, nearly opposite to their steel works, and the product, which will be high grade pig, will be used in the manufacture of open-hearth and other steels.—[American Manufacturer.

*** J. P. WITHEROW, of Pittsburgh, Pa., has received the contract to build the 100-ton iron furnace for the Sheffield Furnace Co., Sheffield, Ala. It is said that work will be begun at once. The plant will consist of a blast furnace 75 feet high, with a 17-foot bosh. There will be three Whitwell fire-brick stoves, 18x50 feet. The chimney will be lined to 8 feet clear way and 160 feet high. There will also be two blowing engines, and a complete equipment of Heine safety water-tube boilers.

*** THE syndicate headed by Samuel Thomas, of Catasauqua, Pa., will build two furnaces near Birmingham, Ala., to begin with, and "a dozen, if desired, in future ages." The name of the company is the Pioneer Mining and Manufacturing Co. The directors of the company, elected at Birmingham, Ala., June 17, are Messrs. Samuel Thomas, of Catasauqua; Robert H. Sayre and Geo. H. Myers, Bethlehem; John Thomas and Edwin Thomas, Hokendauqua; E. W. Clark and G. D. McCreary, Philadelphia; F. A. Potts, New York city, and E. B. Liesenring, Mauch Chunk. The temporary officers are Samuel Thomas, president, and Henry Davis, secretary, Catasauqua.

*** THE Calera Furnace and Charcoal Company organized at Montgomery, Ala. with the following officers: J. W. Dimmick, president; Dr. H. M. Pierce, of Nashville, general manager; Campbell Brown, of Tennessee, vice president; C. A. Lanier, secretary and treasurer; directors, G. W. Dimmick, Campbell Brown, Dr. Pierce, J. R. Adams, W. L. Chambers, A. T. London, O. O. Nelson, J. H. Moore and J. B. Gaston. This company begins immediately the erection of 48 charcoal kilns and one 50-ton iron furnace. These plants are also to be enlarged. The works, immediately after being erected, will manufacture 2,400,000 bushels of charcoal, 120,000 gallons of alcohol, besides resin, turpentine, and taractate of lime.

*** HON. S. S. Fifield, of Ashland, Wis., writes us: "I wish you would correct error as to my being connected with iron works here. The 'Business Men's Association' here appointed a committee to treat with a company for the erection of a blast furnace, and in addition a nail mill and other works in the near future. Serving as chairman of that committee, is all the connection I have with the enterprise. The general manager of the new company is James E. York, whose address is Ashland, Wis. Parties desiring to sell him machinery should address him and not me. I have no time to answer the numerous letters I receive, occasioned by the item in the REVIEW."

MACHINERY.

*** THE Putnam Machine Co., Fitchburg, Mass., are building a new foundy.

*** CITIZENS of Baker City, Ore., will build a $10,000 foundry and machine shop.

*** THE H. A. Ramsay Engineering Works, Baltimore, are adding an iron foundry to their works.

*** J. T. WINDSOR & Co., Milledgeville, Ga., will establish a machine shop, and probably a hub and spoke factory.

*** R. M. BROOKS, Jenkinsville, Ga, is negotiating for machinery for his new foundry and machine shop.

*** T. L. SMITH, of Wausau, Wis., contemplates starting a foundry and machine shop at Reedsburg.

*** J. H. JONES, Talladega, Ala., will establish a shop for repairing machinery, and will also operate a foundry.

Fires in Iron Works.

*** A FIRE at Cuyahoga Falls, O., on the night of the 1st inst., destroyed a large hollow-brick machine shop, and damaged the chain works of Turner, Vaugh & Taylor.

*** THE Standard Horse Nail Company, formerly of Fallston, Pa., are rebuilding their factory, which was burned some months ago, at New Brighton. The establishment will cover nearly an acre of ground.

GENERAL IRON TRADE NOTES

Miscellaneous Iron Works.

*** THE business of the Sterling Chain Works, Cuyahoga Falls, O., has so much increased that the Matherson Chain Works building is being put in shape for their occupation.

*** THOMAS M. CARNEGIE, executor of the William Coleman estate, issued executions July 9 against the Atlas Iron Works, Limited, of Pittsburgh, on confessed judgments aggregating $15,000.

*** THE Brightman Stoker Co., of Cleveland, report business brisk. During the past week they have received orders for Brightman mechanical stokers from the Sherwin-Williams Co., the Paige Car Wheel Co., the Standard Lighting Co., the Cleveland Paper Co., the Standard Oil Co. and E. H. Jones & Co., all of this city; Louis Snider's Sons, of Hamilton, O.; the Excello Mills, of Middletown, O.; Harding Paper Co., Franklin, O., and Graham Paper Co., St. Louis, Mo.

*** A CERTIFICATE of incorporation has been issued to the Bucher & Gibbs Plow Co., with a capital of $250,000, with Messrs. J. R. Bucher, Louis Gibbs, H. A. Cavnah, of Canton, O., and F. E. Myers, general agent, and his brother, P. A. Myers, both of the well-known firm of F. E. Myers & Bro., Ashland, O., as incorporators. The capital stock will be under the control of these persons, and the business will remain under the same management substantially, with the works at Canton, O., as in the past.

LIST OF PATENTS

Relating to Iron, Steel, Metal, Machinery, Hardware and Mining Interests.

Reported expressly for this paper by Chas. J. Gooch, Solicitor of Patents, Washington, D. C.

BEARING DATE JUNE 29, 1886.

Sled, E. M. Deane, St. Paul, Minn.
Pattern for moulding stove covers, F. W. Heckel, Jr., and Z Shade, Columbia, Pa.
Dump wagon, A. Helfrich, Indianapolis, Ind.
Rolling mill, J. Kennedy, Pittsburgh, and H. Aiken, Allegheny, Pa.
Well boring machine, M. K. Lewis, Hastings, and A. B. Starkey, Minden, Neb.
Rolls for rolling girder rails, A. J. Moxham, Johnstown, Pa.
Core strengthening bar, E. Niver, Muscatine, Iowa.
Roll for rolling mills, T. Reed, and J. Holloway, Covington, Ky.
Pipe-wrench, S. A. Rouse, Indianapolis, Ind.
Rock drill machine, A. N. Townsend, Lucas, Iowa.
Sash fastener, M. Bourke, Youngstown, Ohio.
Ingot mold cover, A. J. Lustig, New York, N. Y.
Skate roller, S. C. Mendenhall, Richmond, Ind.
Drawing sheet metal articles, A. W. Paull and G. F. Butters, Wheeling, W. Va. (3 patents).
Rock drill, G. R. Cullensworth, New York, N. Y.
Settler and concentrator, J. E. Clayton and S. F. Mackie, Salt Lake City, Utah.
Drop door for ovens, L. L. Culver, St. Louis, Mo.
Combined pan and stove cover lifter, P. A. Gordon, Milan, O.
Machine for washing coal, etc., R. Robinson, Howlish Hall, England.
Flanging tool, J. D. McDougal, Columbus, Ohio.
Apparatus for distributing coal in cars, R. Ramser, Braceville, Ill
Coal mining machine, W. A. Wright, Centreton, N. J.
Warehouse truck, J. H. Kistler and J. E. Buck, North Lansing, Mich.
Caster, N. Drucker, Cincinnati, Ohio.
Reaming tool for use in sinking bored well casings, W. A. Lloyd, Macksburg, Ohio.
Grate, L. T. Burnham, Hyde Park, Ill.
Rail bender, A. A. Strom, Chicago, Ill.
Lifting jack, A. A. Strom, Austin, Ill.
Method of casting car wheels, (reissue), W. Wilmington, Toledo, Ohio.
Ice creeper, J. F. McConnell and H. E. Habster, Reading, Pa.

BEARING DATE JULY 6, 1886.

Compound metal bar or plate, C. B. Headly, Philadelphia, Pa.
Rock drill, C. O. Barlow, San Francisco, Cal.
Rock drill, S. Ingersoll, Glenbrook, Conn.
Rock drilling machine, S. Ingersoll Glenbrook, Conn.
Sash holder, M. C. Hargrave, Wilmington, N. C.
Springless lock, A. Park, Ottumwa, Iowa.
Snap-hook, S. S. Stahl, Connellsville, Pa.
Metal roofing, A. W. Walter, Canton, Ohio.
Amalgamator, J. Wilkins, Baltimore, Md.
Ore concentrator, R. N. Clark and N. H. Cone, Leadville, Colo.
Lock, P. Cool, Manhattan, Kansas.
Well drilling machine, W. C. Shear, Port Crane, N. Y.
Shutter-worker, A. F. Evers, Cleveland, O.
Dumping cart, B. G. Fitzhugh, Baltimore, Md.
Barbed fencing strip, J. W. Roop, Harrisburg, Pa.
Nail furnace, G. Rowe, Danville, Pa.
Time-lock, E. J. Woolley, Omaha, Neb.

Wanted

BY PARTY representing and traveling for large Iron Firm through the West, one or two Hardware Specialties. Only first-class articles will be considered. A No. 1 references.
Address B. V., Chicago Journal of Commerce.

Wanted.

1 Lathe, 18" swing, 7 ft. bed (turret head).
1 Lathe, 12" swing, 5 ft. bed.
1 Planer, 36x36x10 ft.
1 Planer, 30x30x8 ft.
1 heavy iron plate Shear.
1 35-H.P. Engine.
1 40-H.P Boiler. (tubular).
New and second hand machinery wanted.
BIDS will be received up to July 15, 1886, for furnishing the above tools, &c. Give full particulars and description, with prices, delivered in Cleveland. Address F. M. & Co., care Iron Trade Review, Cleveland, O. 62

For Sale.

1 NEW UNIVERSAL EMERY GRINDER, Browne & Sharp's make. Never been used. Cost $800; will sell for $600. For further particulars. Address, American Nail Machine Co., Ashtabula, Ohio.
72-ly

Wanted.

SECOND-HAND PLANER, 45 or 48 in. swing, 10-ft. bed. Must be in good order. Address AMERICAN NAIL MACHINE CO., ASHTABULA, O.
72-ly

For Sale.

FACTORY.—Nearly new.—On two Railroads acre of buildings; cost $33,000; take $23,000 part real estate; large engines, boilers, shafting etc.; will put capital in some good manufactory
19 A. C. McCONNELL, Cleveland, O.

For Sale.

ABOUT 125 MAGIC SCREW PLATES, new and first class, at less than cost to maker. Included are Screw Plates, cutting bolts from ¼" to ¾"; also ¼" to 1" with Plug Taps, and Pipe Cutting-off and Threading Stocks, several sizes, from ⅛" to 4" pipe.
$2000.00 worth extra quality Files, bought at old prices.
$2000.00 worth wood Split Pulleys, which will pay for themselves in one season over any other pulley.
Lot of iron Pulleys, at half their cost.
5000 lbs. 5-16", ⅜" and ½" square and hexagon Nuts, at 3 to 5 cents per lb.
Lathes, Planers, Drill Presses and Machinery. Prices low. S. M. York.
42 South Water St., 81 CLEVELAND, O.

For Sale.
Second Hand Machinery.

1 Band log saw mill, (London, Berry & Orton's make.)
1 Iron planer, 22x22 in., 5 feet bed.
1 Pipe cutter.
1 Drill.
1 Gang drill (10 spindles.)
1 Sand preparing machine.
1 18x20 in. vertical engine.
2 pairs vertical hoisting engines, 6x10 in.
1 8x9 in. vertical hoisting.
1 12 in. Cameron steam pump.
5 small steam pumps.
Large lot of engines and boilers, all sizes and styles, and miscellaneous machinery for sale cheap. The Harms Machine Depot.
32-3m 92 & 94 1st Ave., PITTSBURG.

Best Business Opportunity
In the South.

FOR LEASE CHEAP.

ATLANTA BRIDGE WORKS,

ATLANTA, GA.

SIX ACRES GROUND, good buildings, well equipped, good machinery. FOUNDRY with full line patterns for Architectural work.
Tracks connect with all railroads. Apply immediately to W. R. TUTTLE, Pres't,
72 KNOXVILLE, TENN.

For Sale.

1 14x6 feet Screw Cutting Lathe, Star, new.
1 14x8 feet " " " " "
1 16x6 feet " " " " "
1 18x10 feet " " " " "
1 20x10 feet " " " " "
1 24x12 feet " " " " "
1 30x30 feet " " " " "
1 28x16 feet " " " " "
1 42-inch Upright Pulley Borer, Star, new.
1 46-inch Horizontal Borer, Star, new.
1 24-inch " " second hand.
1 Traverse Drilling Machine, new.
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CLEVELAND, O. 49

MARKET REVIEW.

OFFICE OF IRON TRADE REVIEW.
CLEVELAND, O., FRIDAY EVENING, July 16, 1886.

Iron Ore.

The iron ore market is quite active. Inquiries are numerous, and sales of fair-sized lots are frequent. The aggregate of sales has now reached so nearly the probable output for the season that some mines, at least, that have some still to offer, are disposed to wait for a possible advance, rather than push sales at the present time. In spite of rumored concessions, which sellers say is the sound of consumers pounding the market, Gogebic ores are held firm, and with the exception of off lots, there have been no concessions verified. In the case of non-Bessemer grades, opinions seem to vary considerably. A prominent pig iron commission merchant remarked to the writer that before the year was out, non-Bessemer ores would be as low as at any time last season, and that a price had been named to him by an ore seller that was as low as it sold for last year. He was certain that a less price must be made, as furnaces could not pay the price and come out even at present prices of pig iron, and in his opinion there would be a large surplus left on dock. This opinion is quite contrary to the opinion of parties equally-well posted, who predict a shortage rather than a surplus of all grades, and believe that prices will experience a sharp advance in the Fall. Shipments from upper lake ports continue quite active, and total shipments to July 7 were as follows: Ashland 188,707 tons; Marquette, 308,054 tons; St. Ignace, 18,956 tons; Escanaba, 518,229 tons. Ore is moving forward quite freely to the furnaces, and 19,516 tons were received at Cleveland the past week, and 30,169 tons shipped. An effort has been made by the Pittsburgh furnacemen to have the railroads reduce the freight rates on ore to those prevailing before the advance. A committee appointed by the railroad commissioners governing the pool decided not to make any reduction, which gives rise to a great deal of dissatisfaction on the part of furnacemen who claim that the present rates are excessive, and are not warranted by the state of the pig iron market. We quote f. o. b. cars four months:

No 1 Specular and magnetic Bessemer ores per ton.	$6 25
No. 1 Specular (non-Bessemer) ores per ton	5 50
Bessemer Hematites	$4 75@5 50
Non-Bessemer Hematites	$4 00@4 50

Pig Iron.

The pig iron market presents few features of an encouraging nature, and reports indicate that prices vary considerably. The demand is quite limited, although some merchants report an increased number of inquiries, which indicate that there are some consumers in the market who will soon be buying iron. Mills seem fairly employed and some foundries are quite busy, while most all have some work on hand. Production seems at present crowding the consumption so close as to weaken prices, which have been lower this month than in June. A seller reports to us having sold neutral mill iron during the past week on a basis of $16.70 four months at Cleveland. There is considerable call for charcoal iron for which an average quotation would be about $20.50 f.o.b. cars, Cleveland, four months. We quote f.o.b. cars, Cleveland, four months:

CHARCOAL PIG IRON.

Nos. 1 and 2 Lake Superior charcoal	$20 50@21 50
Nos. 3 and 4 Lake Superior	21 00@22 00
Nos. 5 and 6 Lake Superior	19 00@20 00
Southern Car Wheel	25 50@28 50

BITUMINOUS AND COKE IRON.

No. 1 Bessemer	$ 19 20
No. 1 foundry, all lake ores	18 50
No. 2 same	17 50@18 00
No. 1 foundry, lake ores, with cinder mixture	17 50@18 00
No. 2 same	17 00@17 50
No. 1 foundry, native Ohio ores	18 00@19 00
No. 2 same	17 00@18 00
No. 1 silvery, native Ohio ores	17 00@18 50
No. 2 same	16 00@17 00
No. 1 gray forge, red short	16 20
No. 1 gray forge, neutral	15 70
No. 1 Ohio Scotch (Softener)	18 75
No. 2 Ohio Scotch "	18 25

Hardware.

The hardware market is fairly active, and a fair demand exists for general assortments. Prices are generally firm. Tackle blocks are a shade weaker. Gun and musket caps have advanced, and also wringers.

NAILS.—There is no change in the nail market. Trade is still quiet, and prices are only fairly firm.

Manufactured Iron.

The market for manufactured iron continues dull and quiet as usual, and with the exception of occasional light orders, there is nothing to relieve the monotony which has long since grown tiresome. While it is said that all the mills are fairly employed, they are dependent on what small orders may come in from day to day to keep them so. There has been no improvement in prices which are now depressed as low as ever by the excessive competition. While all are convinced that better prices should be demanded there has been no united effort looking to an advance, and it is extremely doubtful whether in the present state of affairs there could be.

Scrap Iron.

Although consumers seem hardly ready to take hold and buy, there seem to be indications of a considerable movement of scrap in the near future. At present stocks are accumulating in the hands of dealers, who seem to be buying any lot offered at prices which seem to allow them any reasonable assurance of realizing a small margin of profit. In the absence of transactions of importance, it is difficult to quote prices, as dealers are quite reticent about naming them until they see what the future may bring forth. Old rails for immediate delivery are said to be scarce in this market. A nominal quotation is $20, but the actual selling price would depend on circumstances, and some are quoting higher rates, although no one seems to have very many on hand to offer. Of old car wheels there seems to be more than enough, although there is quite a demand for them at the present price, which is said to shade $16.00, but some lots bring that rate.

Metals.

The metal market is dull and quiet at present, and there has been no noticeable change. The demand, though light, is reasonably steady. We change our quotations to more nearly harmonize with the market.

Coke.

The coke business continues brisk. Demand is still active and quite sufficient to consume the output of the Connellsville ovens, which, with the exception of those closed by petty strikes, are now fully employed. The workmen are still very uneasy, strikes are of daily occurrence, and if the operators do not accede to their new sliding scale scheme when arranged, there is a possibility of a general strike, as the activity of the coke trade has been so favorable to the men that all their demands have been conceded, and they seem to think that the operators will allow anything rather than permit a strike to take place. The operators, however, assert that they will not submit to further dictation by the men, and will refuse to accept the scale plan of adjusting wages.

DETROIT PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Charles Himrod & Co.

[For other portions of this letter, see editorial page.]

In our market here the demand for Southern iron is comparatively light, owing to the large contracts made at the close of last year for delivery covering all of 1886. Ohio irons and Northern coke generally remain firm with a good steady demand. There is some weakening in anthracite irons, but these never cut a figure in the Michigan market, except when they are considerably below the market, as has been the case during this month. Old wheels are being looked after a little more carefully. There is a slight stiffening in price, and it really is hard work finding any quantity of this staple article. We should quote to-day (July 14), on four months' time, about as follows:

Lake Superior Charcoal, all Nos. $21 50@$22 50; Lake Superior Coke, all ore, $20 00@$21 00; Lake Superior Coke, cinder mixed, $18 00@$19 00; Standard Ohio Blackband, $20 00@$21 00; Southern No. 2, $17 00@$17 50; Southern Silvery, open, $17 00@17 50; Southern Silvery, close, $16 50@$17 00; Jackson County (Ohio) Silvery, $18 00@19 00; American Old Iron Rails, $20 00@$21 00; Old wheels, $16 50@$17 50.

PITTSBURGH PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by A. H. Childs.

The market continues very dull, with more metal offering than can be absorbed, which naturally affects prices to some extent. Outside brands which have not usually been offered here, and which can be sold only by attractive concessions, are now seeking buyers in this market, and this fact contributes considerably to the general weakness of prices. Quotations are (July 12):

PIG IRON.—No. 1, Foundry, $18 00@19 00; No. 2, Foundry $17 00@18 00; Gray Forge, $16 00@16 50; White and Mottled, $15 00@15 50; Warm Blast Charcoal, $19 00@23 00; Cold Blast Charcoal, $23 00@28 00; Bessemer, $19 00@20 00; 4 months.

CINCINNATI PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co.

There is unquestionably a better tone pervading the Western pig iron market, though the prices of current orders run lower perhaps than quotations in June. The important difference is that until the past two weeks the steady tendency of prices was downward. Now bottom is reached, transactions are mostly at the bottom, but the tendency is towards improvement. As an illustration one furnace two weeks ago offered a Western buyer several thousand tons of a certain grade, at a certain price. It was declined. This week the buyer wants the iron, but the seller has moved up 50 cents per ton in price. Production is at the heaviest rate ever known in this country, but consumption fully keeps apace, as the nearly bare furnace yards North and South show. The features of the trade just at present are the car works, pipe works, and agricultural concerns. Stove and jobbing foundries are rather dull. We quote on the cash basis as follows (July 12):

HOT BLAST FOUNDRY IRON.—Ohio and Southern Strong Coke, No. 1, $16 00@$17 00; Ohio and Southern Strong Coke, No. 2, $15 00@$16 00; Ohio and Southern Strong Coke, No. 3, $14 50@$15 50; Ohio Soft Stonecoal, No. 1, $17 00@$17 50; Ohio Soft Stonecoal No. 2, $15 50@$16 50; Mahoning and Shenango Valley coke, No. 1, $18 00@$19 00. CHARCOAL IRON.—Hanging Rock, No. 1, $19 00@$21 00; Hanging Rock No. 2, $18 00@$20 00; Tennessee and Alabama, No. 1, $17 50@$18 50; Tennessee and Alabama, No. 2, $16 50@17 50. FORGE.—Strong Neutral Coke, $14 00@$15 00; Mottled Coke, $13 00@$13 50, Cold Short Coke, $13 00@$14 00. CAR WHEEL MALLEABLE—Southern Car Wheel Iron, $21 00@$24 00; Hanging Rock Cold Blast, $25 00@$27 00; Hanging Rock Warm Blast $20 00@$22 00; Lake Superior Malleable, $22 00@$23 00.

Reported for the IRON TRADE REVIEW by A. Pluemer & Co.

The demand is increasing slowly, but prices remain unchanged. The market seems liable to reach a higher limit of quotations, but is very sensitive, and may go either way, which will probably be contingent upon developments during the next 30 days. However, a good Fall trade is very generally expected, as there is nothing in sight which is likely to cause further disturbance in trade.

CHICAGO PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Mack & Durkee.

The past week has developed a stronger market, and prices of the best grades of iron have advanced. The buyers recognize that bed-rock has been reached for the present, and instead of trying to bear prices any further are working to secure contracts at quotations made them a week or ten days ago. The improvement has been caused by actual increase in the consumption of metal in all the principal departments of foundry work, and by the near approach of the time when the larger concerns contract for their supplies for six months or a year. There seems to be no probability of prices receding, and a considerable advance would not be unexpected. We quote as follows (July 13):

Lake Superior Charcoal, $21 00; Lake Superior all-ore coke iron, No. 1, $20 00; Lake Superior Cinder mixed coke iron, $19 00; Hanging Rock Charcoal, $21 00; Southern coke, No. 1, $18 00; Southern coke, No. 2, $17 00; Virginia brown ore Scotch, $21 00; Old wheels, $16 00.

LOUISVILLE PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Geo. H. Hull & Co.

The pig iron market in this section seems to be in thorough sympathy with the markets East. Standard brands are firm at our quotations. Some sales of favorite brands have been made at a shade over our quotations; on the other hand, some brands, not so well liked, have sold at prices under our inside quotations. We quote for cash in round lots as below (July 14):

PIG IRON.—Southern Coke, No. 1, Foundry, $16 00@$17 00; Southern Coke, No. 2, Foundry, $15 00@$16 00; Southern Coke, No. 2½, Foundry, $14 50@$15 50; Hanging Rock Coke No. 1, Foundry, $16 00@$16 50; Hanging Rock Charcoal, No 1, Foundry, $18 00@$19 00; Southern Charcoal, No. 1, Foundry $17 00@$18 00; Silver Grey, different grades, $14 00@$15 50; Southern Coke, No. 1, Mill Neutral, $14 50@$15 00; Southern Coke, No. 2, Mill, Neutral, $13 50@$14 00; Southern Coke, No. 1, Mill, Cold Short, $13 50@$14 00; Southern Charcoal, No. 1, Mill, $17 00@$17 50; White and Mottled, different grades, $12 00@$13 00; Southern Car Wheel, Standard Brands, $23 50@$24 50; Southern Car Wheel, other brands, $19 50@$20 50; Hanging Rock, Cold Blast, $23 50@$24 50; Hanging Rock, Warm Blast, $19 50@$20 50.

CHATTANOOGA PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Lowe & Tucker.

There is absolutely nothing new in a business point of view, and everything is moving along in the same old rut. The weather for the past week has been more favorable for farmers, and they have improved the time; but there is no question but what both corn and cotton will be short. Prices of pig can vary but little, as the figures may be considered now down to bed-rock. Notwithstanding this, the furnaces are well sold up. There is now quite an animated inquiry for round lots for Fall and Winter deliveries, and some furnaces are sold up for the balance of the year. We make no changes in quotations:

No. 1, Foundry $14 50@$15 50; No. 2, Foundry $13 50@14 00; American Scotch, $13 50@$14 00; Gray Forge, $12 00@$13 00; Car Wheel Iron, $23 00@$25 00; Ores, Red and Brown, $1 50@$2 25; Furnace Coke, $2 00@$2 30; Bar Iron, per 100 lbs, $1 75; Old rails $18 00@19 00; Old wheels, $13 00; Wrought scrap, No. 1, 70c. Wrought scrap, No. 2, 50c.; Railroad splices, $1 85; Railroad spikes, $2.25.

ST. LOUIS PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers Brown & Co., W. H. Shields, Manager.

The market continues to improve, and prices on some grades have slightly advanced, and the outlook generally is quite encouraging, notwithstanding the somewhat gloomy reports from other iron centers. There is considerable demand for old rails and wheels at prices somewhat higher than those quoted a few weeks since. We quote (July 10):

Charcoal Foundry—Missouri, $16 00@17 00; Southern, $17 00@$18 00. Coal and Coke Foundry—No. 1 Southern, $16 50@17 50; No. 2 Southern, $16 00@16 50; Ohio Softeners, $17 00@20 00. Mill Iron—Missouri, 15 50@16 00; Southern, $14 00@15 50. Car Wheel and Malleable—Southern, $20 00@25 00; Lake Superior, $21 00@23 00. Scrap, etc.—Old Car Wheels, $15 75@16 25; Connellsville Coke (Frick's) $5 65.

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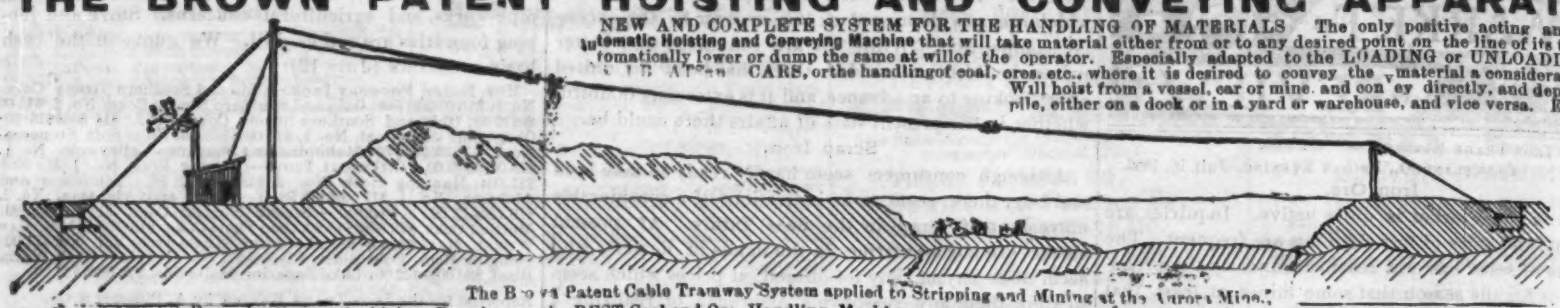

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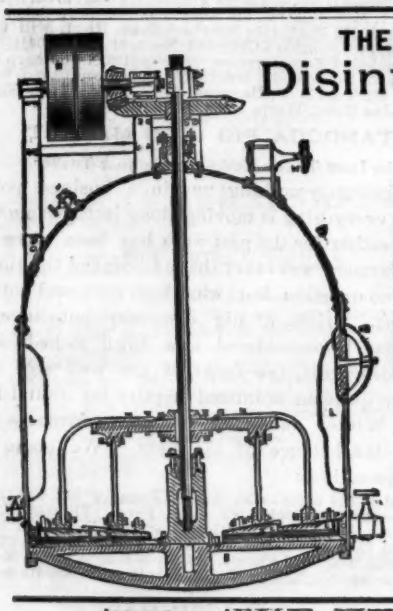


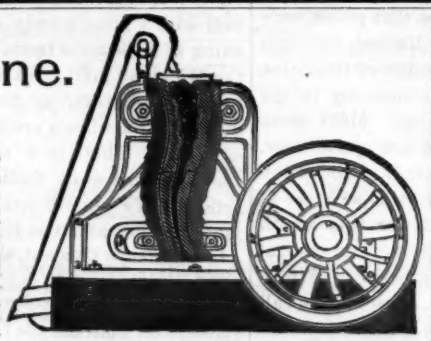
THE MEECH GOLD AND SILVER ORE

Disintegrating Machine.

The Only Method for Preparing the Ore for Amalgamation.

Disintegrating, Decomposing and Desulphurising the ore under a HIGH TEMPERATURE and PRESSURE OF STEAM HEAT, with chemical action and attrition, dissolves and breaks up the chemical combination in the ores, individualizing, cleansing and separating the atoms of metal from the gangue, perfectly freeing them for amalgamation in combination with the MEECH AMALGAMATION MACHINE and process, (being the greatest combination of Amalgamation known), will successfully extract 90 per cent. of the metal from rebellious ores, such as Sulphurets, Sulphates, Sulphides, Chlorides, Bromides, Oxides, Tellurides, &c.

We desire business correspondence in every mining district in the United States.



The Meech Crusher and Pulverizer.

This Machine will **CRUSH AND PULVERIZE GOLD AND SILVER ORES** to 20, 40 and 60 mesh fine, and from 20, 40 and 60 tons **per day.** The PRINCIPLES of this machine, making it superior to all others, are the peculiar concave and convex shape of the jaws, with concave and convex projections, which breaks, crumbles, stamps and pulverizes the ore with less power, wear and tear, than any other machine. Manufactured by

MEECH & CO., Cleveland, O.

We will contract to erect the **Meech Plant of Mining machinery** for successfully treating all grades of gold and silver ore. 02

20-Inch Lever Drill.

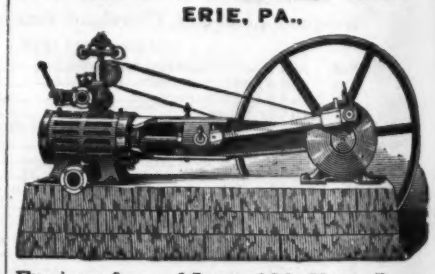
especially made for Agricultural work. This machine has 1 5-16 inch spindle gear to one has 4 change on cone. All gears and racks cut from the solid, fitted for Morse taper No. 2; is a first class tool.

Price $75 00. Send for Catalogue to

W. P. DAVIS,
24 North Bloomfield, N.

Stearns Mfg. Co.

ERIE, PA.,



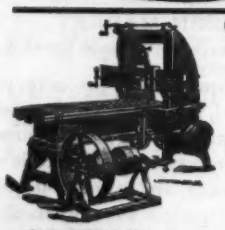
Engines from 15 to 400 Horse Power

Boilers of Steel and Iron

upplied to the Trade or user. Send for Catalogue

Saw Mill and General Machinery

WORKS AT ERIE, PA.



22"x22"x5' Planer.

THE HENDEY MACHINE CO.

TORRINGTON, CONN.,

MANUFACTURERS OF

IRON AND BRASS WORKING MACHINERY.

CATALOGUES SENT ON APPLICATION.

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C. J. CONOLLY & CO.
[Established 1873.]

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Send for Prices and Circular before ordering elsewhere.

THE BEST WORK.

Self-Inker. Price $3 and up.

Burning Brand. Special Prices.

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Steel Stamps. 15 cts. per letter.

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CLEVELAND WHOLESALE PRICES.

HARDWARE.

Anvils. per lb.
Eagle, American ....10cts dis 20@30&5
Wrights ....9½@10
Armitage mouse hole 9
Armitage mouse hole extra 11½
Wilkinson .... 9½@10c

Anvil Vise and Drill.
Millers Falls Co. $18 ....dis 20
Cheney Anvil and Vise ....dis 25

Augers and Bits.
Snells ....dis 60@60 & 5
Cook's Douglass Mfg. Co .... dis 55
Russell Jennings' augers and bits, ...dis 25
Expansive Bits, Clark's small, $18; large, $26.. ....dis35@ 35&5
Hollow Augers, Ives' ....} dis 25
Hollow Augers, French, Swift & Co....} & 10
Hollow Augers, Bonney's Adjust. ⅌ doz. $48 .... dis 40&10
Hollow Augers, Stearns' Adjust. ⅌ doz., $48 ....dis 20&10
Gimlet bits ....per gross $3.00 to $3.25
Holtz Bit Stock Drills ....dis 25&10
Ship Augers ....dis 15@20

Awl Hafts.
Sewing, brass ferrule, ...⅌ gross $3.50, dis 40&10
patent sewing, short ....⅌ doz $1.00, dis 40&10
Patent sewing, long ....$1.20 ⅌doz net
Patent peg, plain top, ..$10.00 ⅌ gro., dis 45&10
Pat. peg, leather top, ...$12.00 ⅌ gro., dis 45&10

Awls, Brad Sets, &c.
Awls, Sewing, Common....⅌ gross $1.70—dis 35
Awls, Shouldered Peg ⅌ gross 2.45—dis 40@40& 10
Awls, Patent Peg....⅌ gross 63c—dis 40@40& 10
Awls, Shouldered Brad....$2.70 ⅌ gross—dis 35
Awls handled brad....$7.50 ⅌ gro dis 45
Awls handled, scratch....$7.50 ⅌ gro dis 35&10
Awls, socket scratch....$1.50 ⅌ doz dis 25@30
Brad Sets, No. 42, $10.50; No. 43, $12.50....dis 70&10&5
Brad Sets, Stanley's Excelsior, No. 1. $7.50 ....dis 30&10

Axes.
Best grades....⅌ doz $6.50 to $7.00
Special Brands.... 5.50@6.00

Axle Grease.
Frasier's, in bulk....keg ⅌lb 4c; pail 5c net
Frasier's, per gross $9.50
Mica Axle Grease.... $8.50 per gross
Mica Axle Grease in bulk.... 4c per lb

Axles.
Nos. 1 to 6 ....dis 3¾, short bed 4½
Nos. 7 to 18.... dis 60&5@60 10
Nos. 19 to 22....dis 70&5

Bag Holders.
Sprengle's pat., ⅌ doz $18....dis 60

Balances.
Spring balances .... dis 50
Common 24lb ....⅌doz $1.50 dis 50

Bells.
Hand, light Brass ....dis 75&10@75&10&5
Hand, Extra Heavy....dis65& 10 to 70
Hand, White Metal ....dis70@70&5
Hand, Silver Chime.... dis 25&10&5
Hand, Globe (Cone's Patent). ....dis 25&10
Gong, Abbe's .... dis 25&10@35
Gong, Yankee .... dis 40&10
Gong, Barton's .... dis 40&10@50
Pull, western ....dis 25&10
Cow, common, wrought .... 60&10
Cow, western ....Sargent's List 70&10
Call ....dis 40@40&5
Farm bells ....⅌lb 2¾@3c
Steel alloy, church and school....dis 40

Bellows. Discount.
Blacksmith's....50&10@50&10&5
Moulders, ...discount 50@50 & 5
Hand, ...discount 50@50 & 5

Belting, Rubber.
Standard ....dis 70&5@70&10
Extra ....dis 60@60&10
N. Y. Belting & Packing Co. standard.. dis 60&10
N. Y. Belting & P'king extra standard dis 50&10
Cleveland Rubber Co., extra standard...dis 60&10
Extra 5 dis on all for Cash.
Shultz Raw Hide Leather Belting, single, dis 30
" " " " double, dis 35
Standard, oak tanned, ...dis 50
Lower grades ....50&10 to 60

Bench Stops.
Hotchkiss's ⅌ doz $5.00.... dis 10@10&10
Weston's ⅌ doz No. 1, $10.00; No. 2, $9 dis 25&10&5
McGill's ....⅌ doz $3.00 dis 10
Morrill's .... ⅌ doz $9.00 dis 50

Bit Holders.
Extension, Barber's....⅌ doz $15 00, dis 40&5
Diagonal ....⅌doz $24.00 dis 40
Angular .... ⅌ doz $24 00, dis 40&5

Blind Adjusters.
Domestic ....⅌ doz $3.00dis 33⅓
Excelsior....⅌ doz $10.00 dis 50 and 10 and 2

Blind Fasteners.
Mackrell's....⅌ doz. pairs, $1,00—dis 20@20&10
Van Sand's Screw Pattern $15 ⅌ gross—dis 50&10
Van Sand's Old Pattern....$15 ⅌ gross—dis 50&10
Washburn's Old Pattern....$9.00 ⅌ gross, net
Merriman's....new list, net
Salisbury & Austin No, 2008....$9.00 ⅌ gross, net
Security Gravity....$9.00 ⅌ gross, net

Blind Staples.
Barbed ⅛ inch and larger.... ⅌ lb 8@8½c net
Barbed ⅜ inch .... ⅌ lb 9@9½c net

Bolts.
Cast iron barrel bolts.... 70 to 70&5
Cast Iron shutter bolts, etc.... 70 to 70&5
Cast iron chain bolts.... 65&10
Ives patent door bolts.... 55
Wr't iron barrel bolts.... 70 to 70&5
Wrought iron square bolts.... 70 to 70&5
Wrought shutter bolts.... 60&10
Sargent's list
Carriage com. new list.... 75&10&5to80&5
Tire, common, new list .... 65&10
Carriage and tire, Philadelphia pattern 75&10@75 [&10&5
Stove bolts 70
Plow bolts 65
Machine .... 75@75&10&5
Bolt Ends ....dis 75@75&10&5@80

Borax.
⅌ lb .... 8½c@9c

Boring Machines.

Without augers.	Upright	Angular
Douglas	5 50	6 75 dis 50
Snell's, Rice's patent	5 50	6 75 dis 40&10&10
Jennings	5 50	6 75 dis 45@45&10
Other machines	2 35	2 75 ....net
Phillips, with augers	7 00	7 50, ...net

Bow Pins.
Humason, Beckley & Co.'s, Nos. 1 and 2 dis 60 and 10@60 and 10 and 5
Humason, Beckley & Co.'s other Nos. dis 70@70 and 10
Sargent & Co.'s....$17 and $18, dis 60 and 10
Peck, Stow & W. Co dis 50 and 10@50 and 10 and 5

Braces.
Q. S. Backus .... discount 60&5@60&10
Barber's....discount 50
Spoffard's Patent ....discount 50&10
Common Ball. American.... 8½ in $1.30-10 in $1.50
Bartholomew's Nos. 25, 27, 30 dis 50&10@50&10&10
Bartholomew's Nos. 117, 118, 119 ....dis 65@65&5
Amidon's Barker's imp'd.... dis 60@10&5
Amidon's corner brace ....dis 40@40&10
Universal ....8 inch $1.90; 10 inch $2.10
Buffalo Ball....8 inch $1.35@$1.40

Brackets.
Shelf, plain, Sargent's list ....55&10@55&10&10
Fancy " " ....dis 60&10@60&10&10
Reading, plain ....dis 60&10@60&10&10
Reading, rosette....dis 65&10@65&10&10

Bright Wire Goods.
Regular List. .... 75&10

Broilers.—Henis' self basting.

Inch	9	10	9x11
Per doz	$4 50	5 50	6 50

Buckets, Galvanized.
Hill's ⅌ doz.... 12qt 3 50....14qt 4 50
Iron clad 14 qt $8 .... dis 00

Bull Rings.
Union Nut Co....dis 55
Sargent's ....dis 66⅔&10
Hotchkiss' low list ....dis 30
Humason, Beckley & Co.'s....dis 70&10
Peck, Stow & W. Co.'s....dis 50&10
Ellrich Hardware Co., white metal low list dis 50

Butts. Discount
Wrought brass .... 80@80&10
Cast brass, loose joint....33⅓&10to33⅓&10&10
Cast Iron—
Fast joint, narrow ....60&5@60&10&5
Fast joint, broad....60&5 to 60&10&5
Loose joint....70@70&10&5
Loose joint, jap....70@70&10&5
Loose joint, jap. with acorns....70@70&10&5
Loose pin, acorns....70@70&10&5
Loose pin, japanned acorns....70@70&10&5
Loose pin, acorns, japanned, platedtips70@70&10&5
Wrought iron—
Wrought, fast joint narrow.... 65&2
Wrought, fast joint broad.... 65&2
Wro't loose joint broad....65&5&2
Table Butts, back flaps, etc.... 65&2
Regular inside blind .... 65&2
Light inside blind .... 65&2
Loose pin .... 65&5&2
Light loose pin.... dis 65&2
Gem spring hinges.... 30
Blind butts, Parker ....dis 75&2
Blind butts, Palmer ....dis 50&5&10
Blind butts, Seymour....dis 70&2
Blind butts, Lull & Porter ....dis 80&10
Blind butts, Nicholson ....dis 45&10
Blind butts, Huffer....dis 50
Blind butts, Clark's Nos. 1, 3, 5 ...dis80&5@80&10
Blind butts, Manhattan Hardware Co....dis
Blind butts, Sargent Nos. 1, 3....dis 75&10
Blind butts, Sargent's No. 12....dis 75&10&10
Blind butts, Reading's Gravity ....dis 75&10
Blind butts, Shepard's "Noiseless" Nos. 50 60, 65, 45, 55....dis 75&10@80
Blind butts, Shepard's Champion Gravity, No 75....dis 80&5&5
Blind butts, Shepard's "Gravity," Nos. 1, 3 and 5....dis 80
North's automatic blind fixtures, No. 2 for wood, $10 50; No. 3 for brick, $13 00 dis 25&2
Shepard's "O.S" and "Acme," Lull & Porter....dis 75&10&5
Shepard's "Queen City" reversible....dis 75&10
Clark's imp'd shutter hinge, Nos. 0, 1, 1½, 2, 2½, 3 ....dis 70@70&

Butcher's Cleavers.
Humason & Beckley Mfg. Co....dis 30&5@30&10
Bradley's....dis 25@30
Beatty's....dis 33⅓&5

1	2	3	4	5	6	7	8
$16 50	19 00	21 50	24 00	27 00	30 00	33 50	36 50

New Haven Edge Tool Co.'s....dis 40
Albertson Mfg. Co....dis 33⅓@33⅓&5

Can Openers.
Sprague No. 1 $2.00, 2 $2.25, 3 $2.50, dis60@60&10
Universal ....⅌ doz $3 00, dis 35&5
Domestic ....⅌ doz $2 50, dis 45
Champion....⅌ doz $2 00, dis 50

Caps—Percussion, ⅌ 1000.
Hicks & Goldmark's
F. L. Waterproof, 1-10's 50c
E. B. Trimmed Edge, 1-10's 65c
E. B. Ground Edge, Cent. Fire, 1-10's 70c
Double Waterproof, 1-10's ....1.40 } dis. 25to25&5
Musket Waterproof, 1-10's 50c
G. D.... 28
Elys waterproof central fire....$1.60

Cartridges.
Rim fire....discount 60&2
Pistol and rifle....discount 40&2
Military and sporting....discount 30&2

Cards.
Horse and Curry.... dis 10@10&10
Cotton ....new list, Aug., 1883, dis 10
Wool....new list, Aug., 1883, dis 10

Carpet Stretchers.
Cast steel, polished....⅌ doz $3.25
Cast iron, steel points.... per doz80c
Sockets ....⅌ doz $1 75
Bullard's.... dis25@25& 10

Cattle Leaders.
Humason, Beckley & Co.'s ....dis 75
Sargent's....dis 66⅔&10
Hotchkiss....dis 30
Peck, Stow & W. Co....dis 50&10

Carpet Sweepers.
Queen....⅌ doz $16.00
Mystic....⅌ doz $17
Cottage....⅌ doz $15
Queen, with band ....⅌ doz $18
King....⅌ doz $30
Garland ....⅌ doz $19

Casters.
Bed ....}
Plate ....} dis 60@60&5
Shallow Socket ....}
Deep Socket ....dis 45 to 50
Yale Casters, list May, 1884. ....dis 25&10@25&10&5
Martin's patent....dis 45&10 to 50
Payson's Anti-friction ....dis 60

Chains.
Trace, 6½-10-2....⅌ pair 79c }
Trace, 6½-10-3....⅌ pair 70c } dis 50&10@60
Trace, 7-10-2....⅌ pair 86c }
German Halter Chain, list June, 1884, dis55&5@60
German Coil, list of June, 1881.... dis55&5@60
Galvanized Pump Chain ....⅌ lb 5½ to 6c

Galvanized Tea-Kettles

Inch	6	7	8	9
Each	50	60	60	75

Chalk.
White ....⅌ gross 55c
White Crayon ....⅌gross 12@12½

Chisels.
Socket Framing, and Frmer ....dis 75@80
Socket Framing and Firmer, Buck, Bros....dis 30
Socket Firmer & Framing, L. & I. J. White.... dis 25 & 5
Tanged Firmers....dis 50 to 50&5

Clamps.
Snow's adjustable, iron .... dis 40&5
Hammer's adjustable, iron.... dis 15
Sargent's cabinet, iron .... dis 66⅔&10

Clips.
Axle and spring bar, Norway iron.... dis 65&2
Wrought-Iron felloe clips....⅌ lb. 5½c
Steel felloe clips....⅌ lb. 5c

Cockeyes.
discount....50

Coal Vases.
Buffalo Palace, S. S. & Co ....dis 33⅓&10&10
Buffalo Common, S. S. & Co....dis 33⅓&10&10

Cocks, Brass.
Racking....dis 65&10@70
Globe.... dis 65&10@70
Plain Bibbs.... dis 60&10@60&10&5
Ale and Beer.... dis 60&10@60&10&5

Coffee Mills.
Enterprise....20 & 10@30

Compasses, Dividers, &c.
Compasses.... dis 60&10&10@70
Calipers.... dis 60&10&10@70
Dividers .... dis 60&10&10@70
Bemis & Call Co.'s Dividers....dis 60&5
Bemis & Call Co.'s Compasses & Calipers..dis 50&5
Bemis & Call Co.'s Wing & Inside or Outside....dis 50&5
Bemis & Call Co.'s Double....dis 60
Bemis & Call Co.'s (Call's Patent Inside)....dis 30
Excelsior ....dis 50
Cook's Extension....dis 20@20 &5
J. Stevens & Co.'s Calipers and Dividers....dis 25&10

Coopers' Tools.
Bradley's.... discount 20
Barton's....discount 20 to 20&5
L. & I. J. White....20 & 5

Corkscrews.
Humason, Beckley Mfg. Co....dis 40
Clough's patent....dis 33⅓@33⅓&5
Howe Bros. & Hulbert....dis 35

Corn Knives.
Corn knives, Bradleys....dis 10

Cradles.
Grain....dis 40&5&2

Crowbars.
Cast steel....⅌ lb 3¾
Iron, steel points.... 3¼@3½

Curry Combs.
Fitch's....dis 50&10@50&10&5
Rubber....⅌ doz. $10.00, dis 25@30

Curtain Pins.
Silvered glass....net
White enamel....net

Cutlery.
Beaver Falls ....dis 33⅓
Goodell table....dis35@ 40

Dog Collars.
Embossed gilt.... dis 30&10
Leather....dis 40

Door Springs.
Torrey's Rod, regular size.... ⅌ doz $1.30
Gem (Coil): list April 19, 1885,....dis 10
No. 1, Large Japanned...⅌ doz. $4.00 }
No. 2, Medium Japanned..⅌ doz 2.75 } dis 50&10
No. 3, Small Japanned....⅌ doz 2.00 }
Japanned and coppered ....dis 60
Galvanized and nickel plated ....dis 50
No. 4, Screen Door size....⅌ doz. 1.50
No. 5, Screen Door size,....⅌ doz. 2.00
No. 6, Medium....⅌ doz. 2.75
No. 7, Large....⅌ doz. 4.00

Drawing Knives.
Douglass & Witherby....dis75@75&5
Merrill....dis 60&10&10
L. & I. J. White....dis 20 & 5
Adjustable handle.... dis 20 to25

Drills and Drill Stocks.
Blacksmiths' each.... 1.50@1.60
Blacksmiths' self-feeding, each...$7.50 discount 20
Breast, P. S. & W....discount 40 & 10
Breast, Millers Falls....each, $3.00 discount 25
Ratchet, Weston's.... 20@25
Automatic Boring Tools....each, $1.75 to $1.85
Twist drills, straight and taper shank 1½ inch and longer 50

Drill Chucks.
Morse's Beach Patent....each, $8.00, discount 20
Morse's Adjustable....each, $7.00, dis 20 to 20&5

Dripping Pans.
Buffalo, S. S. & Co....⅌ lb. 5@5¼c

Egg Beaters.
Dover....per doz. $2.50
Acme .... per gross $8.00

Emery.
Regular numbers ....⅌ lb 7c
Flour and F. F ....⅌ lb 6½c
For emery paper and cloth, see sand paper.

Escutcheon Pins.
Iron....dis 50&10
Brass ....50&10

Escutcheons.
Door Lock....Same discounts as Door Locks
Brass Thread....dis 60 to 60&10
Wood....dis 25

Faucets.
Frary's Patent Petroleum.... dis 40 &10&2
Cork Lined ....dis 70 to 70&10
Self-measuring, Enterprise, per doz $36 dis 20&10

Fly Traps.
Paragon....⅌ doz $2 00

Files.
J. & Riley Carr, new list April 1,1883,....dis 15
J. & Riley Carr horse rasps ....dis 10
Best files of domestic make, according to brand ....dis 55&10@55&10&5
Lower grade domestic files....dis 60&10&10@70
Heller's horse shoe rasp ....dis 50&10

Forks
Hay, Manure and Spading. list....dis 60&10&10
Phila list ....60@60&5

Fruit and Jelly Presses.
Enterprise Mfg. Co....dis 20&10@33⅓

Fry Pans.
Central Stamping Co.'s list....dis 33⅓&2

No	0	1	2	3	4	5	6	7	8
⅌ doz.	$1 50	1 75	2 00	2 25	2 50	2 75	3 25	3 75	4 25

S. S. & Co....dis 40&2
"Acme"....dis 60

Fluting Scissors.
Discount 45

Fluting Machines.
Eagle 3½-inch....$2.15, dis 35
Geneva Hand Fluter, White Metal. ⅌ doz. 12.00....dis 25
Shepard hand, Nos. 85 $15.30, 95 $8, 110 $11 dis 40
Knox, 4½ inch rolls....$3 25 each } dis 35
Knox, 6 inch rolls ....$3 60 each }
Crown, 4½ in. $3 50; 6-in. $4 00; 8-in. $6 50 each ....dis 35
Crown Jewel....6-in. $3 50 each, dis 35
American, 5-in. $3; 6-in. $3 40; 7-in. $4 50 each ....dis 35
Crown hand fluter, Nos. 1 $15; 2, $12 50; 3, $10 ⅌ doz ....dis 30

Gauges.
Marking ....dis 60&10
Wire....dis 10&10
Wire, Wheeler, Madden & Co....dis 10

Gimlets.
Nail and Spike....dis 50&10 & 5
"Eureka" Gimlets....dis 40&10
"Diamond" Gimlets....dis 40&10
Double Cut, Shepardson's....dis 45
Double Cut, Ives'....dis 50
Double Cut, Douglass'....dis 40
"Bee"....⅌ gross $12, dis 25

Glue Pots.
Tin enameled.... dis 35@35&5
Family, Howe's.... dis 40

Grindstone Fixtures.
Sargent's....dis 70&10

Gun Wads.
U. M. C. & W. R. A.—B. E., 11up...2 00 }
U. M. C. & W. R. A.—B. E., 9&10... 2 30 }
U. M. C. & W. R. A.—B. E., 7&8... 2 60 }
U. M. C. & W. R. A.—P. E., 11up... 3 10 } dis 20&2
U. M. C. & W. R. A.—P. E., 9&10... 4 00 }
U. M. C. & W. R. A.—P. E., 7&8... 4 90 }
Eley's B. E., 11 up....1 75
Eley's P. E., 11@20 ....2 80

Hack Saws.
Griffin's Hack Saws, complete....dis 40&10@50
Griffin's Hack Saw, Blades only....dis 40&10@50
Star Hack Saws and Blades....dis

Halters.
Covert's patent ½ jute.... dis 50&10&2
Covert's hemp horse and cattle ties... dis 50&10&2
Covert's jute horse and cattle ties....dis 60&2
Meneely's pat adjustable hemp and jute..dis 50&10
Meneely's hemp and jute horse and cattle ties ....dis 50&10

Hammers.
Maydole's....discount 25@25&10
Cheney's new list, Dec 1,1885....dis 20&10
Buffalo Hammer Co ....dis 30@35
Magnetic Tack, No. 1, 2, 3, $1.25, $1.50 and $1.75, dis 25&10
Heavy hammers and sledges....dis 60&10

Hand Cuffs and Leg Irons.
Providence Tool Co., hand cuffs, $15 ⅌ doz...dis 10
Providence Tool Co., leg irons $25 ⅌ doz....dis 10
Tower's ....dis 25
Daley's improved hand cuffs; 2 hands, polished, ⅌ doz. $48; Nickeled, $57; 3 hands polished, ⅌ doz $72; Nickeled, $84....dis 20

Handles—
Door or Thumb Latches.

Per doz Nos.	0	1	2	3	4	
Sargent's	90	1 00	1 18	1 35	1 50	dis 60&10 & 10

Roggin's Latches....⅌ doz. 30@35c
Bronze Iron Drop Latches.... ⅌ doz. 70c net
Jap'd stove door handles—Nuts, $1 62; Plate $1 10; no plate $0 88....net
Barn door....⅌ doz $1 40, dis 10&10
Wrought chest....dis 70
Surface chest....dis 70
Flush chest....dis 70
Lifting....dis 70
Saw and plane ....dis 40&10
Hammer and hatchet....dis 25@30
Brad awl....⅌ gross $2 00
Hickory firmer chisel, assort....⅌ gross $4 50 }
Hickory firmer chisel, large ....⅌ gross $5 00 }
Apple firmer chisel, assorted ....⅌ gross $5 00 } dis 40
Apple firmer chisel, large....⅌ gross $6 00 }
Socket firmer chisel, assorted....⅌ gross $3 00 }
Socket framing chisel, assort ....⅌ gross $5 00 }
File, assorted....⅌ gross $2 75 }
Auger, assorted....⅌ gross $5 00 } dis 40 @40&10
Auger, large ....⅌ gross $7 00 }

Hangers.
Barn Door, old patterns....dis 60&10 &10
Barn Door, New England.... dis 60&10&10
Climax (Anti-Friction)....dis 55
Zenith Anti-Friction Wood Track....dis 55
Reed's Steel Arm....dis 40
Challenge ....dis 50
"Champion" Medina Mfg. Co....dis 60
Sterling Improved (Anti-friction)....dis 65&10
Victor, No. 1, $15; No.2, $16.50; No. 3, $18.. dis50&5
Cherritree....dis 50 & 5
Kidder's....dis 50&10@50&15
U. S., wood track ....dis 65
The "Boss" ....dis 60
Terry's Patent 5 in.. 12.00; 3½ in., 10.00, dis 40&5 @40&10
Cronk No. 4, 12.00; No. 5, 14.40; No. 6, 18.00, ...dis 50&5@50&10
Architect....⅌ set 6.00, dis 20
Eclipse....dis 20&10
Felix....⅌ set 4.50, dis 20
Hamilton Wrought....dis50@50&10

Harness Snaps
German, old list ....dis 75
Meneely's Pat. Safety new list....dis60&10
Covert, New Patent, new list.... dis 50&2

Hay Knives.
Lightning....per doz. $18 dis 20
Electric.... ⅌ doz $9.50@10.50

Hinges.
Wrought Strap and T Hinges.... 65&5&2
Screw, hook and strap, 8 10 12 in....3½@3¾
14 to 36 in....2½@2¾
Screw hook & eye hinges...½ ⅌ doz 1.50 }
⅝ 2.45 } ...dis 10
¾ 3.80 }
Gate, western....⅌ doz $4 40, dis 55
Gate, N. E. ....⅌ doz $7 00, dis 55
Gate, N. E. reversible....⅌ doz $5 20, dis 55
Gate, Clark's, Nos. 1, 2, 3....dis 60&10&2
Gate, N. Y. State ....⅌ doz $5 00, dis 55
Gate, automatic ....⅌ doz $12 50, dis 50
Gate, common sense....⅌ doz pair $4 50, dis 50
Gate, Seymour's ....dis 45&10
Am. Spring Hinge Co.... 30

Hollow-Ware.
Stove Hollow-Ware, Ground ....dis 50&5@50&10
Enameled and Tinned Hollow-Ware
Kettles.... dis 50&10
Oval Boilers, Saucepans ....dis 30@35
Gray Enameled Ware....dis [illegible]
Rustless Hollow-Ware....dis [illegible]
Jack Chain, Iron ....75@75&10
Jack Chain, Brass....dis75@75&10

Wanted.

AN old established firm, factors of Oils, Colours, and other articles used by Engineers, and Builders, with every facility for conducting a large business, are desirous of obtaining good Foreign Agencies; superior references. "R. M." care of Brown. Gould & Co., 52 New Oxford St., London, England.

For Sale Cheap.

A NEW PONY PLANER, planes from ½" to 6" thick and 24" wide. A strong and durable machine; address for further particulars, X X, care Iron Trade Review, Cleveland, Ohio. 52tf

For Sale, Cheap.

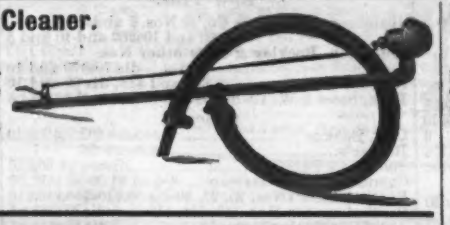
A FOUR HORSE POWER PORTABLE ENGINE, horizontal, with return flue boiler. Warranted in good condition. Any one desiring a good engine at less than half price should correspond with us. Photograph of engine sent on application. Address Wyoming County Times, Warsaw. 52

BASIC AND BESSEMER STEEL ORES.

We have many thousands of acres of the finest Basic and Bessemer Steel Ores for sale, on lines of railroads, with limestone in abundance close by, and coal for coking not very distant; also manganese and many good farms.

Moon & Renick,
52-4w No. 11 Tenth Street, RICHMOND, Va.

Hurley's Automatic Steam Flue Cleaner.



For upright or horizontal boilers.

The most Economical Flue Cleaner in the market.

There is no loss of steam in changing from one flue to another. Satisfa tion guaranteed. Will send to any resp party on thirty days trial.

THE F. F. ADAMS CO.
72 ERIE, PA.

Established 1841.] THE MERCANTILE AGENCY. [105 Branch Offices.

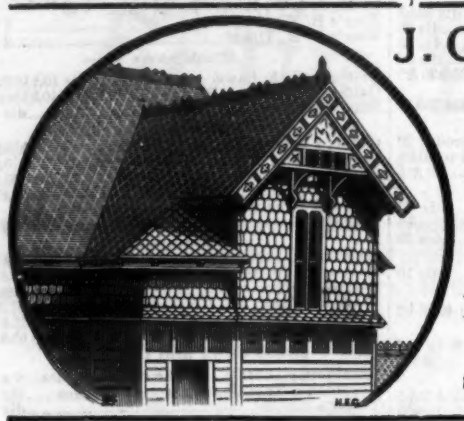
R. G. DUN & COMPANY, Proprietors.

This establishment supplies (to subscribers only) all necessary information as to the standing, responsibility, etc., of merchants, traders, manufacturers, public companies, etc., through the United States, their Territories, and British North America. Also, makes collections and attends to legal business generally. It is the oldest and by far the most complete and extensive ever organized for the accommodation of banking and mercantile interests and for the general promotion and protection of trade. Reference books published quarterly. Cleveland Office—Rooms 73 to 80, Wilshire Building, 209 Superior St. Terms of subscription made known on application. R. P. CATTRALL, Manager.

CONDIT, FULLER & CO.,

PIG & BAR IRON.

153 Water Street, 92-6m Cleveland, O.



J. C. Ewart & Co.

MANUFACTURERS OF

Vitrified Roofing Tile,

CRESTINGS,

HIP ROLLS, &C.

AKRON, O.

Send for prices. 5eowly

NOTICE.—Parties desiring complete printed lists of firms in any line of trade, for mailing Catalogues or Circulars, can obtain same at reasonable rates, or can have circulars addressed and mailed, by

DAY & CARTER.
tf 130 Water Street, Cleveland, O.

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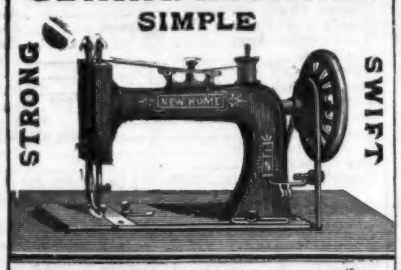
NEW HOME

SEWING MACHINE

SIMPLE

STRONG



SWIFT

THE ONLY SEWING MACHINE THAT GIVES

PERFECT SATISFACTION.

HAS NO EQUAL

PERFECT IN EVERY PARTICULAR

NEW HOME

SEWING MACHINE CO.

ORANGE MASS.

30 UNION SQ. N.Y. CHICAGO ILL.
ST. LOUIS MO. ATLANTA GA.

FOR SALE BY

THE LATEST.

You get the best in the market by buying the

Star Portable Forges and Blacksmith's HAND BLOWER

C. Hammelmann's Patent, April 6, 1886.
Light, Compact. Simple, Durable.
Manner of operating entirely new.
For sale by all Hardware and Machinery Dealers.
Write for discount & catalogue.
Star Machine Co.
90-200 Terrace, Buffalo, N.Y.
Mention this paper

WALKER'S

Adjustable Faced PLANE.

30 BITS of different shapes furnished with each PLANE. The face is quickly adjusted to fit any shaped Bit.

Walker's Detachable handled Chisels & Gouges.

3 Handles answer for a full set of Chisels and Gouges. Manufactured by

E. Walker Tool Co.,
Write for Special Terms. [11] ERIE, PA.

Key Seating Machines

and 20 in. Drills a Specialty.

Our Key Seating Machine will save enough in 60 days' use to pay first cost; no shop can afford to do without one. We have now ready for prompt shipment, both Key Seat Machines and 20 in. Drills. Send for Catalogue.

W. P. Davis,
N. Bloomfield, N. Y.
24

EXCURSIONS.

TO LAKESIDE.

Commencing Tuesday, July 20, 1886, and continuing until August 18, 1886, the Wheeling & Lake Erie Railway will furnish daily service over its favorite route to Lakeside and Put-in Bay, via Huron, offering to the public the most desirable service from all points between Toledo and Bowerston, to either Lakeside or Put-in Bay. This line is formed by the Wheeling & Lake Erie Railway to Huron, and the steamer American Eagle from Huron to Lakeside and Put-in Bay. The trains leaving Bowerston at 6.25 a. m., and Toledo at 7:45 a. m., arrive at Lakeside at 1:00 p. m. and Put-in Bay at 2:10 p. m., daily except Sunday.

LAKE SHORE EXCURSION

TO THE

Rocky Mountains and California.

The L. S. & M. S. railroad have arranged to run an excursion to San Francisco by way of Chicago, Omaha, Denver, Ogden and Salt Lake, leaving Cleveland, July 20, 1886—offering their patrons the finest lines across the continent, and at lower rates than ever made before. Special inducements to members of the Grand Army and their friends. For particulars call on or address M. E. Gaul, passenger agent of the L. S. & M. S. railroad, 173 Superior street, Cleveland, O.

Rocky Mountain Excursion.

We have received a copy of the itinerary of the tenth annual Bee Line pleasure party to the Rocky Mountains and Pacific Coast, which will leave Cleveland, July 20th, 1886. Certainly much care and attention have been given to the careful preparation of the tour, which enables one to take in all the principal points of interest in the mountains at the least expense, and with the least possible loss of time. This, by the way, is one of the praiseworthy features of the excursions, which has made them so deservedly popular with business men and others who desire a season of recreation and rest away from the busy marts of life, and amid the bracing air of the mountains. After doing all the pleasure resorts, the party will continue on to San Francisco, arriving there prior to the opening of the National Encampment G.A.R., to all members of which a cordial invitation is extended to join with them. Those intending a trip to any part of the West, will do well to go with this party. Write for itinerary to any ticket agent of the C. C. C. & I., I. & St. L., or D. & U. Railroads, or to A. J. SMITH, General Passenger Agent, Cleveland, O.

EXCURSIONS to SAN FRANCISCO

via Pennsylvania Lines West of Pittsburgh.

For the National Encampment of the Grand Army of the Republic, to be held in San Francisco, beginning with August 3d, the Pennsylvania Lines West of Pittsburgh will sell Excursion Tickets to San Francisco and return from all stations, at less than one fare for the round trip. Tickets will be sold to members of the Grand Army of the Republic, Women's Relief Corps, uniformed military bodies, and the families and friends of members of any of these organizations who are properly identified. This is a glorious opportunity to visit the Pacific Coast, and the Pennsylvania Lines can give you the choice of the best routes. For full information apply to the nearest ticket agent of the Pennsylvania Company, Pittsburgh, Cincinnati & St. Louis Railway Company, and Chicago, St. Louis & Pittsburgh Railroad Company.

Forest City Brass Works.

J. V. KENNEDY, Prop.,

Manufacturer of

All kinds of Brass Goods.

Models and Patterns a Specialty. 04

19 & 21 Leonard Street, Cleveland, O.

MACHINERY FOR

Straightening & Cutting Wire

Of all Sizes to any Length.
Send for Catalogue.

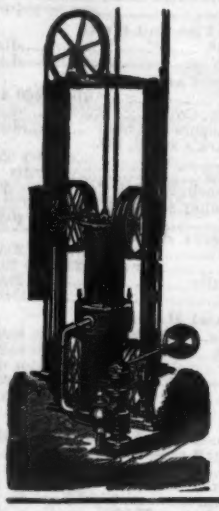
JNO. ADT & SON,
New Haven, Conn., U. S. A.

Paper Boxes

E. F. ATWATER & CO.
Cleveland Paper Box Factory,
149 & 151 Seneca-st [12] CLEVELAND, O

Hydraulic, Hand and Steam Power.

Freight and Passenger Elevators.



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MACHINISTS AND FOUNDRYMEN

Manufacturers

HYDRAULIC, HAND AND STEAM POWER FREIGHT AND PASSENGER

ELEVATORS.

And dealers in Iron and Wood Working Machinery Shafting, Pulleys and Hangers.

Cor. Superior and Oak Strs, Toledo, O.

Novelty Iron Works.

Nobles & Sherlock

PROPRIETORS,

IRON FOUNDERS

Architectural and General Jobbing Castings.

Light Gray Iron Castings a specialty

Also manufacturers of COAL MINE CARS. Correspondence Solicited.

84 CANTON, OHIO.

COMMON SENSE ENGINES,

From 2 to 10 Horse power; Boiler wrought iron.

From 6 to 25 H. P.

Simple, durable, economical, perfect, fully guaranteed. Boilers all wrought iron. Send for illustrated Catalogue. Agents wanted everywhere

Best CORN MILL in the World for plantation and farm purposes.

Stationary Engines from to 100 Horse Power Portables from 6 to 25 H. P.

COMMON SENSE ENGINE CO., Springfield, Ohio

SPECIAL NOTICE

TO MANUFACTURERS.

THE CALUMET & CHICAGO CANAL & DOCK CO.,

The largest land owners at SOUTH CHICAGO and in the Calumet Region, offer on liberal terms

SITES FOR FACTORIES,

Lots or acre property on river and railroad, connecting with the **B. & O., Chicago & Atlantic, Chicago & E. Illinois, Chicago, R. I. & P., Chicago & W. Indiana, and Belt Line, Ill. Cent., L. S. & Mich. So., L., N. Albany & Chicago, Mich. Cent., N. Y., Chicago & St. Louis and P., Ft. W. & Chicago Railroads.**

Number of passenger trains to and from Chicago to South Chicago daily is about 75 each way.

* Also Docks on Calumet River, with its splendid harbor at South Chicago, and the only river property connecting with the Belt Line, which also connects with every R. R. entering Chicago.

Towage One-Half Chicago Rates.

Capital invested at this point alone,	$9,000,000.00
In buildings and plants,	4,100,000.00
Value of product last year,	9,000,000.00
Lumber received last year,	105,000,000 ft.

Among the many large establishments already located are the North Chicago Rolling Mill Co.'s Bessemer Steel Rail Mill, the Calumet Iron and Steel Co.'s Rolling Mill and Nail Manufactory, The Morden Frog and Crossing Works, Chicago Forge and Bolt Works, &c., &c.

MANUFACTURERS, or shippers of **COAL, PIG IRON, IRON ORE LUMBER, ETC.** also parties who wish to build **GRAIN ELEVATORS** will please correspond with us.

Contractors for River and Harbor Improvements, Dredging Dock and Pier Construction, Pile Foundations, etc. Estimates on application.

Office, 170 Dearborn Street, Chicago.

81-6m eow

Hoes.

Garden, mortar, ... dis 60&10&5@60&10&10
Planter's, cot, ... dis 60&10&5@60&10&10
Magic, ... ₱ doz $4.75
Grub, ... dis 60@60&10

Hog Rings and Ringers.

Perfect rings, ... ₱ doz boxes $1.75@$2
Perfect ringers, ... ₱ doz $2.50
Blair hog ringers, ... ₱ doz $

Hoisting Apparatus.

"Moore's" hand hoist, with lock brake ..... dis 15
"Moore's differential pulley block, ... dis 20

Hooks.

Bird Cage, Sargent's list, ... dis 60&10&10
Belt, ... dis 80@80&10
Clothes Line Sargent's list, ... dis 66⅔&10
Chiling Sargent's list, ... dis 60&10
Coat and Hat, Sargent's list, ... dis 60&10
Wire Coat and Hat, Gem, ... dis 45
Wrought Staples and Hooks & Staples, ... dis80&10@80&20
Wire Screw Hooks and Screw Eyes, ... dis 75&10@75&10&5
Hooks and Eyes—Malleable Iron, ... dis 70
Hooks and Eyes—Brass, ... dis 60&10&10

Horse Nails.

	No. 10	9	8	7	6	5	
Auzable, ₱ lb	23	24	25	26	28	31	dis25&10
Putnam, ₱ lb	19	20	21	22	24	27	dis 5 & 7

Horse Shoes.

Burden at factory, ... ₱ keg $3.75
R. I. Horse Shoe Co., Perkins' Imp. at factory, ... ₱ keg $3 75
Walker's forged ..... ₱ keg $3 75
Mule Shoes, at factory, ... ₱ keg $4.75

Hose, Rubber.

dis ..... 75&10@75&10&5
N. Y. Belting & Packing Co. standard ..... dis 60@60&10

Ice Awls, Chisels, &c.

American Ice Chisel Pol'd ..... ₱ doz. $3.00, dis 20

Ice Cream Freezers.

Buffalo champion, S. S. & Co. ..... dis 60&2

Ice Tongs.

Champion ..... ₱ doz $4.00, dis 25&10
Family, ... ₱ doz $2.75, dis 20@25

Jack Screws.

Millers Falls list, ... dis 50

Kettles.

Brass, 7 to 17 inches inclusive, ... ₱ lb 22c. net.
Brass larger than 17 inches, ... ₱ lb 24c. net.
Enameled and Tea Kettles ..... See Hollow Ware

Keys.

Eagle, cabinet, trunk and padlock ..... dis 40 and 2

Knives.

Ames' Butcher, ... dis 25
Ames' Shoe Knives, ... dis 20@25

Knobs.

Carriage, Japanned, ... ₱ gross 80c. dis 60&10
Base, Rubber Tip, ... dis 70&10&5
Hemetite Door Knobs, new list ..... dis 35&5@35&10
Door Mineral ..... } Same discounts as
Door Por. Jap'd } Door Locks.
Door Por. Plat'd }
Door Por. ..... }
Shutter, Porselain, ... dis 65&10

Ladles.

Melting, Sargent's, ... dis 55&10
Melting, Reading, ... dis 35&10
Melting, Monroe's Patent, ... ₱ doz $4.00, dis 40
Melting, P. S. & W ..... dis 35&10@40

Lanterns.

Tubular Standard No. 0, ... ₱ doz 6.75@7.00
" " " 1, ... " 8.25@8.50
Guards for tubulars adds 25 cents per doz.
Tubular, Lift Wire, No. 0, ₱ doz, ... 8.50
Tubular, Lift Wire, No. 1, ₱ doz, ... 10.00
Police, Small, $6.00; Med., $7.25; Large, $9.75 ..... dis10@15

Lemon Squeezers.

Porcelain lined, ... ₱ doz $6 00, dis 25&30
Wood, ... ₱ doz $3 00, dis 35
Eureka, tinned ..... ₱ doz $8 00, dis 10
Dunlap's improved, ... ₱ doz $3 75, dis 20
Sammis' ..... No. 1, $5; 2, $9, 12, $18 ₱ doz dis25&10
Townsend's patent, ... $6 00 ₱ doz dis 33⅓
Jennings' "Star" ..... doz $2 50
The "Boss" ..... ₱ doz $2.50
Dean's No. 1, ₱ doz $6 50; 2, $3 25; 3, $1 90 ..... dis 55
Little giant, ... dis 50
Acme, ... ₱ gross $55 00, dis 50

Lines.

Cotton Chalk, ... dis 55
Silver Lake, Braided, Nos. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No, 3, $7.50 ₱ gross ..... dis 25
Masons' Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50 Net
Masons' Colored Cotton, ... dis 45
Wire Clothes, No 18, $3.75; No 19, $3.75; No. 20 $2.75; .....

Locks, Bolts, etc.

[Nimick & Brittan Manufacturing Co., Pittsburgh].
Discount Sheet No. 8 [March 10, 1886].
No. 0221 ..... $2.40 per doz.
No. 0401 ..... 2.65 "
No. 01051 ..... 2.40 "
Door locks, knobs and latches, ... dis 45
Escutcheons and keys, ... dis 45
Sash locks, ... dis 55
Padlocks and padlock keys, ... dis 75
Bell pulls, mineral, porcelain and jet, ... dis 40
Bell pulls, bronze plated, ... dis 40
Bell pulls, Egyptian bronze, ... dis 40
Bell pulls, genuine bronze, ... dis 50
Lever bell pulls, genuine bronze, ... dis 55
Butts, genuine bronze, ... dis 60
Butts, bronze plated, ... dis 70
Butts, Egyptian bronzed, ... dis 70
Store door locks and latches, ... dis 60
Store door handles, ... dis 60
Shutter hinges and flaps, genuine bronze ..... dis 60
Shutter hinges, bronze plated, ... dis 75
Shutter hinges, Egyptian bronzed, ... dis 75
Shutter flaps, bronze plated, ... dis 60
Shutter flaps, Egyptian bronzed, ... dis 60
Parliament butts, genuine bronze, ... dis 60
Parliament butts, bronze plated, ... dis 75
Parliament butts, Egyptian bronzed ..... dis 75
Flush bolts, genuine bronze, ... dis 60
Flush bolts, bronze plated, ... dis 75
Flush bolts, Egyptian bronzed, ... dis 75
Shutter knobs, genuine bronze, ... dis 60
Shutter knobs, bronze plated, ... dis 70
Shutter knobs, Egyptian bronzed ..... dis 60
Shutter bars, genuine bronze, ... dis 60
Shutter bars, bronze plated ..... dis 70
Shutter bars, Egyptian bronzed ..... dis 70
Sash lifts, genuine bronze ..... dis 50
Sash lifts, bronze plated, ... dis 70
Sash lifts, Egyptian bronzed, ... dis 70
Sash pulls and plates, genuine bronze, ... dis 60
Push plates, genuine bronze, ... dis 60
Drawer pulls, genuine bronze, ... dis 50
Drawer pulls, bronze plated ..... dis 70
Drawer pulls, Egyptian bronzed ..... dis 70
Letter box plates, genuine bronze, ... dis 00
Letter box plates, bronze plated, ... dis 60
Letter box plates, Egyptian bronzed ..... dis 65
Scales, ... dis 40
Thumb latches, Egyptian bronzed, ... dis 75
Barn door locks ..... dis 33⅓

Lumber Tools.

Ring peavies, "Blue Line" finish, ... ₱ doz $20 00
Ring peavies, common finish, ... ₱ doz $18 00
Steel socket peavies, ... ₱ doz $21 00
Mall. iron socket peavies, ... ₱ doz $19 00
Cant hooks, "Blue Line" finish, ... ₱ doz $16 00
Cant hooks, common finish, ... ₱ doz $14 00
Cant hook's mall. socket clasp, "Blue Line" finish, ... ₱ doz $16 00
Cant hooks, mall. socket clasp, common finish, ... ₱ doz $14 50
Cant hooks, clip clasp, "Blue Line" fin., ₱ doz $14
Cant hooks, clip clasp, common finish ..... ₱ doz $12
Hand spikes, ... ₱ doz 6 ft., $15 00; 8 ft., $20 00

Pike poles, pike and hook—	12 ft.	14 ft.	16 ft.	18 ft.	20 ft.
₱ doz,	$11.50	$12 50	$14 50	$17 50	$21 50
Pike poles, pike only, ₱ doz,	$10 00	$11 00	$13 00	$16 00	$20 00
Pike poles, not ironed, ₱ doz,	$6 00	$7 00	$9 00	$12 00	$16 00

Setting poles, doz 14 00 $15 00 $17 00
Swamp hooks ..... ₱ doz $18 00
Landing blocks, ... ₱ doz $22 50
Skidding tongs, ... ₱ doz $51 00
Log binders, ... ₱ doz $26 00
Bended boot calks, 1 to 5 M, dis 25; 5 to 10 M, dis 30
Square steel boot calks, ... dis 40
Chain rafting dogs, ... ₱ 100 $12 50
Ring rafting dogs, ₱ 100, med., $10 00; large $12 00
Timber grapples, ... ₱ doz $30 00

Mallets.

Hickory ..... dis 20&10
Lignumvitæ, ... dis 20&10
Penfield Block Co., Lignumvitæ and Hickory, ... dis 30@30&10

Mattocks.

Regular list, ... dis 60@60&10

Meat Cutters.

Dixon's (P.S.&W.)	1	2	3	4	[&5
₱ doz.	$14.00	$17.00	$19.00	$30.00	dis 45

Draw Cut	Nos. 5	2	6	8	10
Each	$50.00	$75.00	$80.00	$225.00	400.00

dis 20@25
Woodruff's (P S & W) per doz No 100 No 150 $15 $18 dis 45
Hale's—Nos. 11 12 13 [@45&5
$27 $33 $45 dis60&10&10@70

Mincing Knives.

Am. (2d quality), ₱ gro, 1 blade, $7; 2 blades, $12; 3 blades, $18, ... net
Lothrop's ..... dis 20&10
Smith's, ₱ doz. single, $2 00; double, $3 00 ..... dis 40@45
Cowles Hardware Co. ..... dis 50@10@60

Money Drawers.

₱ doz. $18 00

Molasses Gates.

Stebbins' pat' ..... dis 70&10@75&5
Stebbins' genuine ..... dis 66⅔&10
Stebbins' tinned ends, ... dis 40&10
Chase's hard metal ..... dis 50&10
Bush's, ... dis 20
Lincoln's pattern, ... dis 66⅔&10
Weed's ..... dis 20&10

Boss Nos.	1	2	3	4
	$7 00	8 00	9 00	10 00 ₱ doz.

dis 60&10&10

Nails.

Wire Nails ..... See trade report

Nuts and Washers.

Square nuts ⅝ and smaller, ... 9½c off list
Square nuts, 7-16 and larger, ... 8½c off list
Hexagon nuts, ⅝ and smaller ..... 10½ off list
Hexagon nuts, 7-19 and larger, ... 9½ off list
Washers, ⅝ and 7-16 smallers ..... 9¾c off list
Washers, 7-16 and larger ..... 8¾ off list
In lots less than 100 lbs., ₱ lb add ⅛c to list, 1 lb boxes 1c to list.

Nut Crackers.

Table (Humason & Beckley Mfg. Co.) ..... dis 40
Blake's pattern, ... ₱ doz. $2 00, dis 10
Turner & Seymour Mfg. Co. ..... dis 50

Oakum.

Government ..... ₱ lb 7c
U. S. Navy, ... ₱ lb 6½c
Navy ..... ₱ lb 5½c

Oilers.

Zinc and Tin, ... dis65&5@70
Brass and Copper, ... dis 50&10
Malleable (Hammer's), No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. ..... dis 10@ 10&10

Packing, Steam.

N. Y. Belting & Packing Co ..... dis 50@50&10
American Packing, ... 10@11c
Russia Packing, ... 14c
Italian Packing, ... 14@15c
Cotton Packing ..... 15@18c

Pencils.

Faber's Carpenters' ..... high list, dis 50
Faber's Round Gilt, ... ₱ gro $5.25 net
Dixon's Lead, ... ₱ gro $4.50 net
Dixon's Lumber, ... ₱ gro $6.75 net
Dixon's Carpenter's, ... dis 40&10

Picks.

Railroad, 5 to 6 lbs, ... $11 dis 60&10
" 6 to 7 lbs, ... $12 dis 60&10

Pinking Irons.

₱ doz ..... 65c. net

Picture Nails.

Brass head, Sargent's list ..... } dis 50&10&10
Brass head, combination list, ... dis 50&10
Porcelain head Sargent's list, dis, ... 50&10&10
Porcelain head, combination list, ... dis 40&10

Plane Irons.

L. & I. J. White, ... dis 25

Pliers and Nippers.

Button's Patent ..... dis 30&10@40
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21 00 ₱ doz. ..... dis 20&10@33⅓
Gas Pliers, ... dis 60
P. S. & W. Cast Steel ..... dis 50
P. S. & W. Tinners' Cutting Nippers add 6 per cent. dis 10

Plumbs and Levels.

Standard list, ... dis 70&10@70&10&10
Disston's, ... dis 45&10
Pocket levels, ... dis 70&10@70 &10&10
Davis' inclinometers, ... dis 10&10

Post Hole and Tree Augers.

Samson Post Hole Digger, ₱ doz. $36.00, dis 20&10
Fletcher Post Hole Augers ..... ₱ doz. $36.00, dis 20
Eureka Diggers, ... ₱ doz. $16 00 @ $17.00
Leed's ..... per doz $8.00 @ 9 00
Vaughan's Hollow Tube Post Hole, ... $24.00 dis33⅓&5

Potato Parers.

White Mountain, ... ₱ doz $5.00@$5.50
Antrim Combination, ... ₱ doz $8.00
Hoosier ..... ₱ doz $13.50

Pruning Hooks and Shears.

Disston's Combined Pruning Hook and Saw ₱ doz $18.00, ... dis 20&10
Disston's Pruning Hook ..... ₱ doz $12.00 dis 20&10
E. S. Lee & Co.'s Pruner, ... dis 40
Pruning Shears ..... ₱ doz 3.75@$4.00 net

Pulleys.

Hot House ..... discount 66⅔&10
Japanned Screw, ... discount 66⅔&10
Brass Screw, ... discount 70&10
Japanned Side, ... discount 66⅔&10
Japanned Clothes Line, ... discount 60&10

Pumps.

Cistern, best makers, ... dis 50
Pitcher spout, best makers, ... dis 60
Pitcher spout, cheaper goods, ... dis 70@70&10

Punches.

Saddlers' or Drive, ... ₱ doz. good quality, 65@70c
Bemis & Call Co.'s Cast Steel Drive, ... dis 50&5
Bemis & Call Co.'s Springfield Socket, ... dis 50&5
Solid Tinners, ... ₱ doz. $1.44, dis 55

Rails.

Sliding Door, Wrought Brass, ₱ lb 35c dis 20@25
Sliding Door, Iron, Painted ₱ foot 4c dis 20&10&5

Rakes.

Cast Steel, ... dis60&10@60&10&10
Malleable ..... dis 60&10@60&10&10

Razors.

J. R. Torrey Razor Co. ..... dis 20
Wostenholme & Butcher, ... $10 @ £ ... dis 10

Rivets.

Iron, in bulk, ... discount 45
Copper, ... discount 60&5@60&10

Rivet Sets.

..... dis 50&10

Rods.

Stair, Brass, ... dis 25&5
Stair Black Walnut, ... 50c ₱ doz

Rollers.

Barn door, Sargent's list, ... dis 60&10&10
Acme (Anti-Friction), ... dis 55
Union barn door roller ..... dis 70

Rope.

Manufacturer's list Feb. 6, 1886.. dis 1c@1¼ ₱ lb
Manilla, ... ⅝ inch ₱ lb 13½
Manilla, ... ¼ and 5-16 inch ₱ lb 14
Sisal, ... ½ and larger ..... per lb 9
" ..... ⅜ ..... per lb 9½
" ..... ¼ & 5-16 ..... per lb 10

Rules.

Boxwood, ... discount 80&10

Sad Iron.

From 4 to 10 lbs at factory ... per 100 lbs $2.35@2.50
Self-heating, ... ₱ doz $9 net
Self-Heating, Tailor's, ... ₱ doz $18 net
Gleason's Shield and Toilet, ... discount 25
Mrs. Potts's Irons, double pointed, ... dis 40@40&5
Mrs. Potts's Irons, square back, ... dis 40@40&5
Enterprise Star Irons, ... discount 40
Com. Fluter and Sad Iron ... ₱ doz $15, discount 15

Sash Weights.

Per ton $20

Saws.

Disston's Circular, ... discount 45&10
Disston's hand panel, rip &c., ... discount 20&10
W. M. & C., Champion Regular, ... per foot 25c
W. M. & C., " Thin Back, ... ₱ ft 29 c

Saw Frames.

White, Vermont, ... ₱ doz $1.50, dis 25&10
Red, polished & varnished ₱ doz $1.50, dis 10@15
Saw rods, ... $10 list dis 10&10

Saw Sets.

Aiken's Genuine, ... $13.00, dis 50 &10
Morrill Saw Sets No. 1 $15.00; No. 3 and 4 $24.00 ..... dis 40 &10

TRAVELERS' REGISTER.

[Standard Time.]

Cleveland, Columbus, Cincinnati & Indianapolis.

DEPARTURE

No. 3, Col. Cin. & Ind. Ex	7 00 A. M
No. 5, Col., Cin. Ind. and St L. Ex	*10 55 A. M
No. 9, Col., Cin., Ind. and St. Louis Ex.	* 7 00 P. M
No. 23, Grafton & Wheeling Ex	6 45 A. M
No. 27, Columbus Accommodation	3 30 P. M
No. 29, Massillon and Uhrichville Ex	4 10 P. M

ARRIVALS.

No. 2, Col., Cin. Ind and Mattoon Ex	9 50 P. M
No. 4, Col., Cin. & St. Louis & Ind. Ex	* 2 55 A. M
No. 8, Col , Cin., Ind. and St. Louis Ex.	*7 30 A. M
No. 24, St. Louis, Ind. & Col. Ex	*2 25 P. M
No. 22, Massillon and Uhrichville Ex	10 00 A. M
No. 20, Galion Accommodation	9 00 A. M
No. 12, Columbus and Cincinnati Ex	*2 35 P. M
No. 28, Wheeling Express	6 35 P. M

*Daily .all other trains daily except Sunday.

N. Y. C. & St. L. R'y

EASTWARD.	ARRIVE.	DEPART.
Buffalo Passenger	10 40 a m	10 45 a m
Chicago Passenger	9 00 p m	.....
Local Freight	4 40 p m	5 45 a m
WESTWARD.	ARRIVE.	DEPART.
Chicago Passenger	.....	6 45 a m
Fostoria Passenger	4 46 p m	4 51 p m
Local Freight	5 00 p m	5 50 a m

Rocky River Accommodation departs 7 40 a. m.; 1 35 p. m.
Euclid Accommodation departs 6:24 a. m., :10 a. m., 5:05 p. m.
All trains daily, except Sunday.

Cleveland & Pittsburg.

	DEPART.	ARRIVE.
Mail	7 50 a m	1 00 p m
New York Express	2 10 p m	6 25 p m
Alliance Accommodation	3 45 p m	10 10 a m
Ravenna Accommodation	4 50 p m	8 15 a m
Night Express	11 10 p m	6 00 a m
Newburg Accommodation	10 15 a m	11 30 a m
Newburg Accommodation	12 10 p m	1 30 p m

Train leaving at 2 10 p m has Pullman Buffet Sleeper from Cleveland to New York without change.

New York, Pennsylvania and Ohio.

	ARRIVE.	DEPART.
N. Y. & Pitts. Express	16 10 a m	*8 25 a m
N. Y. & Pitts. Express	*6 35 p m	‡11 10 p m
Fast N. Y. & Pitts. Express	*10 50 a m	*3 00 p m
Mahoning Accommodation	.....	‡7 00 a m
Pittsburgh Local Express	† 10 40 p m	
Youngstown Local	*2 00 a m	
Mahoning div. and Pit	.....	*12 05 p m
Mahoning Val Accom	.....	*4 25 p m
Pittsburgh accomodation	*4 50 p m	

* Daily. † Daily except Sunday. ‡ Daily except Monday.

Lake Shore & Michigan Southern Railroad.

TRAINS GOING EAST.	Arrive from West.	Depart East.
No. 4, Fast Limited Ex	*2 55 a m	*3 05 a m
No. 8, N. Y., B'f'n & At. Ex	*8 25 a m	*8 50 a m
No. 22, Elyria Accom	†7 45 a m	.....
No. 24, Toledo & Buffalo Accom. via Sandusky	†10 30 a m	†10 45 a m
No. 24, Toledo Accommodation via Norwalk	†10 30 a m	†10 45 a m
No. 10, St. Louis & N. Y. Ex.	*11 40	*12 00 noon
No. 12, N. Y. & Bos. Ft. Ex.	*2 10 p m	*2 45 p m
No. 2, Night Ex. via Norw'k	9 40 p m	†10 00 p m
No 26, Conneaut Accom	.....	†4 25 p m

TRAINS GOING WEST.	Arrive from East.	Depart West.
No. 1, Fast Limited Ex	*12 15 a m	*12 25 a m
No. 23, Cleveland Express	*2 15 a m	
No. 3, Chi. Ex. via Sand'y	†6 00 a m	†6 30 a m
No. 25, Mich. Ac. via Norw'k	.....	†6 30 a m
No. 21, Toledo Ex. via Norwalk and Sandusky	†12 50 p m	†3 20 p m
No. 5, Fast St. Louis & Chicago Ex. via Sandusky	*10 45 a m	*11 50 a m
No. 9, Chi. Pac. Ex. via Nor'k	*6 15 p m	*6 40 p m
No. 31, Elyria Accommodation, to Elyria only	.....	†4 30 p m
No. 27, Conneaut Accom	†8 10 a m	.....

Sunday train for Nottingham— Depart 8:15 a. m. and 1:45 p. m.; returning, leave Nottingham at 8:50 a. m. and 3:45 p. m.
Reference marks—*Daily. †Daily except Sunday. ‡Daily except Monday.
A local Cleveland and New York Sleeper daily on No. 12, leaving Cleveland at 2:45 p m, arrives Grand Central Depot, New York, 10:30 a. m.
For further information as to trains and connections apply at the Union Ticket Office, corner Bank and Superior-sts., under Merchants' Bank.

Cleveland and Canton Railroad.

Arrive.—Canton, Sherrodsville and Coshocton 10 00 a.m., 6 50 p.m.
Kent —*7 50 a.m., 10 00 a.m., 6 50 p.m.
Bedford—6:00 a.m., *7:50 a.m., 10:00 a.m., 1:05 p.m., 6 40 p.m., 6 50 p.m.
Newburgh and Miles avenue—6-00 a.m., *7:10 a.m., *7:50 a.m., 10:00 a.m., 1 05 p.m., 4:25, p.m. 6:40 p.m., 6.50 p.m., 9:25 p.m.
Depart—
Canton, Sher'dsville & Cosh't'n—7:00 a.m. and 3:10 p.m.
Kent—7;00 a.m., 3:10 p.m., *6:00 p.m.
Bedford—7.00 a.m., 11:10 a.m., 3:10 p.m., 4:50 p.m., *6:00 p.m., 10:35 p.m.
Newburgh and Miles Avenue—6:12 a.m., 7:00, a.m., 11:10 a.m., 2:00 p.m., 3:10 p.m., 4:50 p.m., *6:00 p.m., 8:10 p.m., 10:35 p.m.
Zanesville, Newark, etc., 7:00 a.m., 3:10 p. m.
Theater train leaves Cleveland at 10:35 p.m., and runs through to Bedford.
Trains marked with * run daily. All others daily except Sunday.
Depot at Ontario street, opposite Huron street

Valley Railway.

	ARRIVE.
From Canton	10 10 a m
From Canton, Pittsburg and intermediate points	2 00 p m
From Valley Junc., Canton & Akron.	5 50 p m
	DEPART.
Akron, Canton and	8 20 a m
Mahoning Valley p...	2 25 p m
Akron, Canton & Valley Junc	5 00 p m

*Daily. †Daily except Sunday.
Trains leave depot, South Water Street.

Cleveland, Lorain and Wheeling.

	DEPART.	ARRIVE.
Wheeling Express	6 45 a m	6 35 p m
Uhrichsville Express	4 10 p m	10 00 a m

WEST'S
MOULDERS' TEXT-BOOK:
BEING PART II OF
AMERICAN FOUNDRY PRACTICE.
Presenting best methods and original rules for obtaining good, sound, clean castings, and giving detailed description for making moulds requiring skill and experience.
Also containing a practical treatise upon the construction of cranes and cupolas, and the melting of iron and scrap steel in iron foundries. By
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Special Department for the Exhibition of Models and Sale of Patents.

Chagrin Falls & Southern RR.

TIME TABLE.

Went into effect May 10th, 1886.

Standard Time.

Chagrin Falls..lv.	6 45am	9 15am	12 10pm	5 00pm
Collins	6 55	9 25	12 20	5 10
Chamberlins	7 06	9 35	12 30	5 20
Solon.....arrive	7 15	9 45	12 40	5 30
VIA N.Y.P.& B.RR.				
Solon .....leave	7 25	10 15	12 50	6 05
Newburgh.....	7 50	33	1 10	6 20
Cleveland.....	8 05am	105	1 30pm	6 35pm
Cleveland, leaves	6 45am	8 25am	3 00pm	5 00pm
Newburgh, ...	7 03	8 40	3 15	5 20
Solon, ...arrive	7 25	8 58	3 38	5 45
VIA N.Y.,P.& O.RR.				
Solon .....leave	7 30	10 20	3 45	5 50
Chamberlins	7 40	10 30	3 55	6 00
Collins.....	7 50	10 40	4 05	6 10
Chagrin Falls	8 00am	10 50am	4 15pm	6 20pm

J. W. WILLIAMS, Gen'l Supt.

WHEELING & LAKE ERIE

TIME TABLE—IN EFFECT JUN. 14, 1886.

Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9.*	No. 1.*
Toledo.....lv	7 45 AM	12 30 PM	4 45 PM	.....
Oak Harbor...ar	8 43	1 22	5 38	.....
Fremont.....	9 07	1 47	6 02	.....
Clyde.....	9 23	2 03	6 18	.....
Bellevue	9 38	2 18	6 32	.....
Monroeville..lv	9 57	2 32	7 01	1 35 AM
Norwalk	10 13	2 50	7 20	1 50
Wellington	11 03	3 45	9 00	2 32
Creston.....ar	11 52	4 33	10 45 PM	3 15
Orrville.....ar	12 20 PM	5 05	11 45 AM	3 45 *
Orrville.....lv	12 40	5 05	6 00	6 00 AM
Massillon.....ar	1 20	5 45	6 40	6 40
Massillon.....lv	1 29	5 45	6 40	6 40
Valley Junc.lv.	2 10	6 45	8 00	8 00
Sherrodsville...	2 40	7 15 PM	9 00	9 00
Canal Dover.....	2 38 PM	.....	8 00	8 00 AM
New Comerst'n	3 27	.....	8 47	8 47
Cambridge.....	4 39	.....	9 45	9 45
Macksburg	6 19	.....	11 38	11 38
Marietta.....ar	7 20 PM	.....	12 50 PM	12 50 P M

WESTWARD.	No. 6.	No. 8.		
Marietta lv	6 20 AM	2 30 PM	.....	.....
Macksburg	7 25	3 42	.....	.....
Cambridge.....	8 54	5 20	.....	.....
New Comerst'n	9 48	6 20	.....	.....
Canal Dover.....	10 28	6 55	No. 4.	No. 2.*
Sherrodsville...	12 05 PM	4 30	6 45 AM	
New Cumberl'd	12 17	5 00	7 00	
Valley Junc.....	12 35	7 30	7 25	
Massillon.....	1 20	8 45	8 12	
Orrville.....ar	1 55	9 55	8 50	
Orrville.....lv	2 00	10 15 *	8 50	
Creston..... lv	2 30	10 45	9 22	
Wellington	3 18	11 28	10 10	
Norwalk.....	4 10	12 10 AM	11 25	7 25 AM
Monroeville	4 22	12 25 *	11 37	7 37
Bellevue.....	4 40	.....	11 55	7 53
Clyde	4 56	.....	12 10 PM	8 08
Fremont.....	5 13	.....	12 30	8 25
Oak Harbor.....	5 41	.....	12 55	8 48
Toledo.....ar	6 35 PM	.....	1 55 PM	9 45 AM

29.	27.	Norwalk & Huron.		26.	28.
P. M.	A. M.			A. M.	P. M.
5 15	11 40	.....	ar..... Huron..... lv	.....	6 25	2 05
5 02	11 25	.....	...Fries Landing.....	.....	6 38	2 18
4 50	11 10	.....	.....Milan.....	.....	6 52	2 35
4 30	10 45	.....	lv...Norwalk.....ar	.....	7 15	3 00

* Daily.

M. D. WOODFORD, Gen'l Manager. JAMES M. HALL Gen'l Pass. Agt. Toledo.

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A. J. SMITH, General Passenger Agent.

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Special Sunday Trips during July and August.

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Detroit & Cleveland Steam Nav. Co.

DETROIT, MICH.

T. T. NEWMAN, P. & F. A., 23 River Street, Cleveland, O.

The Picturesque Lehigh Valley Route.

Three through trains with Pullman cars attached are now run via by this beautiful scenic route, between Suspension Bridge, Buffalo, New York and Philadelphia, leaving Suspension Bridge 8:18 A. M. 4:10 and 7:45 P. M., Buffalo 9:00 A. M. and 4:40 and 10:00 P. M., connecting with all trains from the West.

Passengers between the East and West passing over the famed LEHIGH VALLEY ROAD will experience the pleasure of a trip through the most magnificent and picturesque scenery in the world, presenting an ever varying panorama of delightful surprises.

Double track, steel rails, magnificent road bed and unrivaled equipment, all combine to make the LEHIGH VALLEY the favorite and most desirable route between the East and the West.

Anthracite Coal is used entirely, guaranteeing to passengers perfect freedom from the dense volumes of smoke that so greatly annoy passengers on lines using Bituminous Coal.

E. B. BYINGTON,
Gen'l Pass. Agent, Mauch Chunk, Pa

The New York, Chicago & St. Louis

RAILWAY COMPANY.

The Passenger Equipment of this Line is all new and is supplied with the latest appliances necessary to safe, speedy and comfortable travel.

Trains depart from and arrive at Union Railway Depot, Van Buren street, Chicago, and N Y., L. E. & W. Railway Depot at Buffalo.

Following is time in effect April 25, 1886, and until further notice:

GOING WEST. Local Fr'ht			Lv	Ar		GOING EAST. Local Fr'ht
	a.m				p.m	
	9 40		..... Buffalo		5 45	
	12 50 p.m		.....Erie, ...		2 33	a.m
	2 43		...Ashtabula...		12 44	9 47
	3 43		..Painesville..		11 55	7 40
	3 56		..Willoughby..		11 33	7 00
	4 46		arCleveland lv		10 45	5 45
a.m					p.m	p.m
5 50	4 51	6 45	lv "	ar	10 40	9 00	4 40
8 20	6 06	7 53	..... Lorain.....		9 31	7 56	2 40
9 12	6 30	8 15	.. Vermillion ..		9 11	7 34	2 00
							p.m
11 00	7 35	9 10	.....Bellevue ...		8 00	6 25	12 01
	8 05	9 45	Green Springs		7 35	5 54	
					a.m		
	8 50	10 25	.....Fostoria.....		6 50	5 00	
		10 37	.....Arcadia			4 49	
		11 32	..... Leipsic.....			3 57	
		1 50 p.m	Ft. Wayne			1 30	
		7 50	.....Chicago.....			7 50 a.m	

Through Tickets to all points are on sale at principal offices of the Company at lowest rates for any class of tickets desired. Baggage checked to destination.

B. F. HORNER,
General Passenger Agent.

LEWIS WILLIAMS,
General Manager. Cleveland, O.

Pittsburgh & Lake Erie Railroad.

On and after November 16, 1886, passenger trains will depart from and arrive at the Pittsburgh and Lake Erie Depot at Pittsburgh, as follows, Central time:

P. & L. E. R., R. Depart for—

No. 7, Cleveland, Bradford and East,.....	6 30 a.m
No. 5, Buffalo, St. Louis, Cleveland	7 20 a.m
No. 51, Beaver Falls Accommodation.....	8 30 a.m
No. 1, Buffalo, New York, and all New England points,.....	10 20 a.m
No. 3, Chicago, Cincinnati, St. Louis,...	12 55 p.m
No. 9, Buffalo Express.....	3 40 p.m
No. 11, Beaver Falls Accommodation.....	5 50 p.m

Arrive from—

No. 8, Buffalo and Cleveland Night Exp.	5 55 a.m
No. 10, Beaver Falls Accommodation,...	7 28 a.m
No. 2, Youngstown Accommodation,.....	9 10 a.m
No. 12, Chicago, Cincinnati & St. Louis,	12 45 p.m
No. 50, Beaver Falls Accommodation,...	1 35 p.m
No. 6, Buffalo Express,.....	5 10 p.m
No. 4, Cincin., St. Louis and Cleveland,	7 50 p.m

Pittsburgh & Lake Erie trains Nos. 2, 3, 5, 9, and 12 daily.

W. C. QUINCY, General Manager.
R. W. JONES, Master of Transportation.
GEO. REPPERT, Ticket Agent.
A. D. SMITH, Gen'l Pass. Ag't, Pittsburgh.

Ft. Wayne, Cincinnati & Louisville

RAILROAD.

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NORTH and SOUTH

THE DIRECT ROUTE TO OR FROM

Fort Wayne, Indianapolis, Terre Haute, Evansville, and St. Louis.

13 MILES SHORTER 13
—BETWEEN—
Fort Wayne and Indianapolis
Than any other Route.

22 MILES SHORTER AND QUICKER 22
By 3 HOURS, Between
Louisville and Fort Wayne.

No change of Cars
—BETWEEN—
Cincinnati and Fort Wayne,
Via White Water Railroad.

All trains arrive and depart from Central Union Passenger Station Cincinnati, Corner Third Street and Central Avenue.

DIRECT CONNECTION

At Fort Wayne with L. S. & M. S. Trains for all points North and East.

Ask for Tickets
—VIA—
Ft. Wayne, Cincinnati & Louisville Railroad.

For sale by all Agents of connecting lines, EAST, WEST, NORTH AND SOUTH.

W. W. WORTHINGTON, Gen'l Supt. ROBT. F. KINNAIRD, Gen'l Ticket Agent, FORT WAYNE, IND.

Scioto Valley Railway

TIME TABLE.

In effect July 19, 1885.

THE SHORT LINE TO ALL POINTS

North and South, East and Southeast, West and Northwest.

TRAINS GOING SOUTH.

STATIONS.	No. 2.	No. 4.	No. 6.
Columbus.....Lv	6 25 a.m	11 45 a m	5 30 p.m
Valley Crossing...	6 48 "	12 08 p.m	5 52 "
Lockbourne	7 00 "	12 20 "	6 06 "
Ashville.....	7 15 "	12 36 "	6 24 "
Circleville.....	7 45 "	1 05 "	6 50 "
Kingston	8 08 "	1 32 "	7 13 "
Chillicothe	8 40 "	2 05 "	7 55 "
Sharon	9 22 "	2 47 "	8 43 "
Waverly.....	9 32 "	2 57 "	8 54 "
Piketon	9 45 "	3 11 "	9 08 "
Big Run.....	10 08 "	3 28 "	9 25 "
Lucasville.....	10 25 "	3 46 "	9 45 "
Portsmouth	10 50 "	4 10 "	10 10 "
Sciotoville.....	11 08 "	4 28 "	10 27 "
Wheelersburg	11 15 "	4 34 "	10 35 "
Haverhill	11 38 "	4 54 "	10 55 "
Hanging Rock.....	11 50 "	5 05 "	11 05 "
Ironton	12 02 p.m	5 17 "	11 17 "
Petersburg	12 15 "	5 30 "	11 30 "
Ashland .....Ar	12 50 p m	6 05 p.m	12 05 a.m

Trains Nos. 2 and 4 daily, except Sunday.
Train No. 6 daily.
Train No. 6 takes supper at Chillicothe.

TRAINS GOING NORTH.

STATIONS.	No. 1.	No. 3.	No. 5.
Ashland Lv	2 20 a.m	7 30 a.m	4 55 p.m
Petersburg	2 55 "	8 05 "	5 30 "
Ironton	3 08 "	8 18 "	5 43 "
Hanging Rock	3 20 "	8 30 "	5 55 "
Haverhill.....	3 31 "	8 41 "	6 06 "
Wheelersburg	3 50 "	9 03 "	6 26 "
Sciotoville.....	3 56 "	9 10 "	6 31 "
Portsmouth.....	4 10 "	9 25 "	6 45 "
Lucasville.....	4 34 "	9 50 "	7 12 "
Big Run.....	4 51 "	10 08 "	7 31 "
Piketon.....	5 07 "	10 23 "	7 48 "
Waverly.....	5 21 "	10 36 "	8 03 "
Sharon	5 32 "	10 47 "	8 15 "
Chillicothe	6 35 "	11 55 "	9 00 "
Kingston	7 04 "	12 22 p.m	9 27 "
Circleville.....	7 27 "	12 47 "	9 50 "
Ashville.....	7 55 "	1 12 "	10 13 "
Lockbourne	8 14 "	1 29 "	10 29 "
Valley Crossing...	8 26 "	1 43 "	10 43 "
Columbus.....Ar	8 50 a.m	2 05 p.m	11 05 p.m

Train No. 1 daily.
Trains Nos. 3 and 5 daily, except Sunday.

COUPON TICKETS, by the best routes and to all principal points in the United States and Canada, can be found at the following Stations: Columbus, Circleville, Kingston, Chillicothe, Waverly, Portsmouth, Ironton, A. C. & I. Jc., Ashland.

For further information relative to rates, connections and through time, call on your Ticket Agent, or address J. ROBINSON, Receiver.

JNO. J. ARCHER, Gen'l Pass. & Ticket Ag't, Columbus, Ohio.

JOHN ADT & SON,
—BUILDERS OF—
HARDWARE MANUFACTURING MACHINERY.
Send for Catalogue.
NEW HAVEN, CONN., U. S. A.

Cleveland & Marietta R. R.

New Through Line Between the Ohio River and the Great Lakes.

The popular line to Chicago, St. Paul, Milwaukee, Minneapolis, and all points in the Great Northwest. Direct connection for the Pennsylvania Oil Fields and all points East and Southeast. December 6, 1885.

GOING NORTH. Exp. No. 2	Exp. No. 4	STATIONS.	GOING SOUTH. Exp. No. 3	Exp. No. 1
am	pm		pm	pm
6 20	2 30	lv.....Marietta..... ar.	7 20	12 50
s6 43	2 56	.....Stanley.....	6 52	12 23
7 06	3 20	.....Warner	6 29	11 58
7 25	3 42	.....Macksburg.....	6 10	11 38
7 32	3 50	.....Dexter City.....	6 02	11 30
7 53	4 11	.....Caldwell.....	5 40	11 04
8 28	4 45	.....Mt. Pleasant.....	5 05	10 19
8 38	4 55	.....Byesville.....	4 55	10 02
8 50	5 10	.....Cambridge.....ar.	4 30	9 45
9 47	6 20	.....New Comerstown.....	3 27	8 47
10 28	6 55	.....Canal Dover.....	2 38	8 00
	pm			am
10 51	7 20	.....Valley Junction.....lv	2 12	7 35
am	am		pm	pm
		.....Valley Junction.....	11 48	8 35
11 39	7 58	.....Canton.....	10 58	7 52
pm	.....		am	pm
12 33	8 54	.....Akron.....	10 00	7 00
pm	am		am	pm
1 50	10 15	lv.....Cleveland.....ar.	8 35	5 40
pm	pm			
8 00	6 20	.....Buffalo.....		
pm	pm		pm	
1 10	10 05	.....Orrville.....	12 20	6 00
				am
1 55	10 45	.....Creston.....lv	11 50	5 20
2 40	11 28	.....Wellington.....	11 00	4 30
	am			
3 27	12 10	.....Norwalk.....	10 13	7 12
3 44	12 25	.....Monroeville	10 00	7 02
			am	pm
5 55	5 20	.....Toledo.....	7 50	5 00
pm	pm			
12 35	11 55	.....Columbus.....	.....	.....
am	am			
5 40	8 5	.....Chicago	.....	.....
pm	am			
3 30	600	.....Pittsburgh.....	.....	.....
am	pm			
7 00	6 55	.....New York.....	.....	.....

NO. 17, ACCOMMODATION.

	a.m		a.m
Cambridge.....	6 30	Macksburg.....	9 00
Byesville.....	6 55	Warner.....	9 30
Pt. Pleasant.....	7 15	Stanley.....	10 02
Caldwell	8 17	Marietta.....	10 35
Dexter City.....	8 47		

s Stop on signal only.

Connections made with all lines at junction points for all important cities east and west.

A. T. WIKOFF, Receiver.
W. A. McCloy, Acting Gen. Pass. Agent.

New York, Penn. and Ohio Railroad

N.Y., L.E. & W. R.R. CO. LESSEES.

New York, Boston and the East.

THE SHORTEST AND QUICKEST ROUTE TO PITTSBURGH, WASHINGTON AND BALTIMORE, AND THE SOUTHEAST.

Change of time goes into effect May 30, 1886.

Central or Ninetieth Meridian time, 33 minutes slower than Cleveland city time.

Until further notice trains will leave from the New Central Depot, South Water Street and Viaduct, as follows:

	Depart.
No. 62, Mahoning Valley Accommo	† 6 45 a m
No. 72, New York Express,.....	* 8 25 a m
No. 72, Fast Pittsburgh Express	* 8 25 a m
No. 64, Fast New York Express.....	* 3 00 p m
No. 64, Pittsburgh Express.....	* 3 00 p m
No. 66, Mahoning Valley Accommo	* 5 00 p m
No. 68, New York Express,.....	†11 10 p m
No. 68, Pittsburgh Express.....	†11 10 p m
No. 70, Pittsburgh Local Express.....	*11 55 p m
	Arrive.
No. 61, New York Express.....	† 6 00 a m
No. 61, Pittsburgh Express.....	† 6 00 a m
No. 65, Fast New York Express.....	*10 50 a m
No. 65, Pittsburgh Express,.....	*10 50 a m
No. 67, Pittsburgh Express.....	* 1 10 p m
No. 63, New York Express...	* 6 35 p m
No. 63, Pittsburgh Express, ...	* 6 35 p m
No. 69, Pittsburgh Local Express	† 9 25 p m
No. 77. Youngstown Local	† 8 05 a m

Erie Express—Fast Line from all points East and South-east, arrives in Cleveland 1:10 p m (except Monday).

* Daily. † Daily, except Sunday.

☞ This is the only route by which passengers can reach Corry, Elmira, Binghampton, New York City and intermediate points without change. No change to Boston and New England cities.

Baggage checked through to all points East.

Through tickets and information regarding the route can be obtained at office, 224 Bank street, and at New Depot N. Y., P. & O. Railroad, South Water street, and Viaduct, Cleveland.

J. N. ABBOTT, G. P. A., New York.
A. E. CLARK, Ass't Gen'l Pass. Agent, Cleveland, O.
W. M. CLEMENTS, Gen'l Superintendent, Cleveland, O.
M. L. FOUTS, Passenger Agent, 224 Bank Street, Cleveland, O.

UNION ELECTROTYPE FOUNDRY
829 SHERIFF ST. CLEVELAND O

Tobacco Cutters.

Enterprise Mfg. Co. (Champion)..... dis 20&10@30

Transom Lifters.

Wellensak's Patent..... dis 50

Traps.

Game, Newhouse.....15c ℔ doz holes
Wood, mouse.....℔ gross $18 00 dis 15
Delusion, mouse.....

Twine.

	BC.	P.
No. 12, Flax Twine, ¼ and ½ lb Balls	22c	24c
No. 18, " " ¼ and ½ "	20c	22c
No. 36, " " ¼ and ½ "	19c	21c
No. 204, Mattgass ¼ and ½ "		50c
Chalk Line, Cotton, ½ lb Balls		23c
Mason Line, Linen, ⅛ "		60c
2-Ply Hemp, ¼ and ½ lb Balls (Spring Twine)		14½
3-Ply " 1 lb Balls		18c
3-Ply " 1½ lb Balls		13c
Cotton Wrapping, 5 Balls to lb		14@20c

Vises.

Solid box.....50 & 10@60
Parker's.....discount 20@25
Prentiss..... " 25@25 &5
Stephen's..... " 25
Saw Filers, Wentworth's.....dis 20&10
Saw filers, Stearn's.....dis 40

Washer Cutters.

Smith's Patent.....℔ doz $12 00, dis 20&10&10
Johnson's.....℔ doz $11 00, dis 33⅓
Penny's.....℔ doz Pol. $14 00; Jap'd. $16 00, dis 55
Appleton's.....℔ doz $16 00, dis 60&10
Bonney's.....dis 30&10

Well Wheels.

8 in., $1.85; 10 in., $2.25; 12 in., $2.90

Wire. New List Jan. 18, 1884

Brass and Copper.....discount 33⅓@30&10
Bright and annealed, Nos. 0 @ 18..... dis 70
" " Nos. 19 @ 26..... dis 67½
" " Nos. 27 @ 36..... dis 72½
Coppered Nos. 0 to 18, market list.....dis 65 & 5
Galvanized Nos. 0 to 18, market list..... dis 60&5
Tinned market No. 0@18.....dis 60&5
Cast steel..... dis 50
Tinned Broom Wire.....dis 60
Annealed Fence, Nos. 8 and 9.....dis 65
Annealed Grape, Nos. 10 to 14..... dis 65
Fence Staples.....℔ lb 3½
Fence Staples, galvanized..... ℔ lb 4½
Stubs Steel Wire regular.....$6 00 @ lb dis 30
Barb Wire, galvanized..... ℔ lb 4⅞@5

Wrenches.

Joe's genuine, cash in 10 days..... 60 & 3
Girard Standard.....discount 70@10
Agricultural.....discount 80@80&5
Mechanics'.....dis 60&10 & 3
American adjustable.....dis 45
Coes' pattern, malleable.....dis 80& 5
Coes' pattern, wrought..... dis 80@80&10

Wringers.

	Per doz.
No. 2½ Universal	$27 00
No 2 Universal	30 00
Novelty for Common Tubs, No. 2, 10-inch	$27.00
Novelty, for Common Tubs, No. 3, 11-inch	31.50
Excelsior, with Folding Bench, No. A, 10-in.	45.00
Excelsior, with Folding Bench, No. B, 11-in.	49.50
Peerless No. 2½	27.00
Peerless No. 3½	31 50

.....dis 5@10 ℔ cen

TINNERS' STOCK.

Tin.

Banca.....per lb. 22½@23
Straits..... " 22½@23
English..... " 22½@23
Bar..... 23½@24

Spelter.

American, cash, ℔ lb..... 4⅝@5c
Bergenport.....9c

Charcoal Tin Plate.

IC 12x12 225 sheets..... $5 25@7 50
IX 14x20 112 sheets..... 6 25@9 25
DC 12½x17 100 sheets..... 5 00@5 50
DX 12½x17..... 6 25@7 00
IC 10x14 225 sheets.....℔ box 5 00@7 50
IC 20x28 112 sheets.....10 25@15 25
IX 10x14 225 sheets..... 6 25@9 25
IX 12x12 225 sheets..... 6 25@9 50
For each additional X add $1 25@$2 00.

Coke Tin Plate.

	Best	Ordinary
IC 10x14 } IC 14x20 }	$4 75	$4 55@4 60
IC 12x12	4 87½	4 75@—
IC 10x10 (Gutters 225 sheets)	8 00	7.25@—
IC 20x28 (112 sheets)		10 25

Solder.

Half and Half, in bars, warranted.....14¼@14½
No. I, Refined.....11¼@12

Zinc.

Zinc, cask.....5 50@5 70
Zinc, open.....6¼@6¾

LEAD.

Pig.....5@5¼c
Bar. ℔ lb.....5¼@5¾c
Pipe. ℔ lb.....6¾c, discount 20 per cent
Sheet. ℔ lb.....7¾c. discount 20 per cent
Tin-lined pipe.....15c, discount 20 per cent
Block.....40c
Chilled Shot ℔ bag 25 lbs..... 1 70

Babbit Metal.

N P U.....℔ lb 6½@7c
X.....10c
XX.....15c
JB.....20c

COPPER.

Lake Ingot.....12@12¼
Baltimore.....10⅝@10¾
Arizona.....10¾@11c

IRON AND STEEL.

Flat Bar.

1½ to 4 by ⅜ to 1 inch.....1 55
4¼ to 6 by ⅜ to 1 inch.....1 75
1¾ to 6 by 1⅛ to 1 inch.....2 05
1¼ &1⅜ by ⅜ to ¾.....1 75
1 &1⅛ by ⅜ to ¾.....1 80
⅞ ¾ and ⅞ by ⅜ to ⅝.....2 50

Round and Square.

1 to 1⅜ inch.....1 65
2 to 2⅝.....1 85
2¾ to 3¼ inches.....2 5[illegible]
3½ to 4.....2 65
4¼ to 4½.....3 15
4¾ to 5.....3 35

Oval.

⅜ to 1¼ inch.....2 05
⅜ to ¾.....2 52
½.....2 54
⅝.....2 85

Heavy Band.

1½ to 6 by ¼ and 5-16 inch.....19[illegible]
1 to 1½ by ¼ and 5-16 inch.....19[illegible]
¾ to ⅞ by ¼ and 5-16 inch.....29[illegible]
⅝ to ⅞ by ¼ and 5-16 inch.....29[illegible]

Half Oval and Half Round.

1½ to 3 inch.....2 75
⅞ to 1¼.....2 35
⅝ to ¾.....2 85
½.....3 15
⅜.....4 65

Light Band.

1½ to 6 by ⅛ to 3-16.....2 15

Hoops.

1½ to 4, Nos. 13 to 15.....2 45
1¼ to 2, Nos. 16 to 18.....2 55
1 and 1⅛, Nos. 13 to 15.....4 05

Sheet Iron.

No. 22 to 24.....2 80
No. 25 to 26.....3 00
No. 27.....3 20
No. 28.....3 40

Steel.

Best Quality Refined Cast Steel—Square, Flat Octagon and Round. Cents.

⅝ to 2 inches, inclusive..... 9
1-16 and 2⅛ to 3 inches.....10
¼ and 3¼ to 4 inches.....11
7-32 and 4¼ to 5 inches.....12
3-16 and 5⅛ to 6 " 14½
5-32 " 18½
¼ " 25½
Oil well steel forgings.....18½

Machinery Steel.

	Crucible.	Bessemer & open-h'rth.
Ordinary sizes, ⅝ to 2 in. round	4	3
5-16 and 2¼ to 3 in.	5	4
¼ and 3¼ to 6 in.	6	5
7-32 in.	7	6
3-16 in.	9	8

Square, Flat and Octagon, ½c. extra throughout list.
Cut to specified lengths, ½c. extra.

Hammer Cast Steel.

	Cts. ℔ lb.
Crucible cast steel	5
Open-hearth steel	4

Sheet Steel.

	Crucible Best.	Crucible 2d. Qual.	Crucible 3d. Qual.	Bessemer & open-h'rth.
To 21 gauge,	9c.	8c.	6c.	5

1c. extra for each additional gauge. Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Augur and augur bit..... 3
Axle steel for wagons..... 3
Frog points and plates..... 5½
Frog size bars..... 5
Pick, hammered..... 5
Skate Steel..... 4½
Mattock, beveled..... 3
Table cutlery..... 3½
Table Cutlery, beveled..... 4
Trap spring steel..... 6
Pike and cant hook..... 7
Coal and granite wedge..... 7
Roller..... 5½
Spindle, subject to machinery classification. 5½
Trap spring steel..... 6
Forged crank pins and lathe spindles..... 7½
Piston rods, plain..... 4
Piston rods, forged to shapes..... 7½
Slide bars, plain..... 5
Slide bars, forged to shapes..... 7½

Open Hearth or Bessemer.

Boiler fire-box and flue sheets not less than 3-16 thick.....4c
Boiler, fire-box and flue sheets, not less than ¼ thick.....5c
Circulars and semi-circulars, when ordered separately.....6c
Smoke stack, to shape.....5c
Locomotive tank steel.....4c

File Cast Steel.

Square, round, half round and flat bastard, 8-inch and over.....
Mill saw, 8-inch and over.....5c
Taper, 3½-inch and over.....6c
Horse and shoe rasp.....5c

Spring Cast Steel.....4c

Spiral, taper, cut to lengths.....5½c

Tire Cast Steel.

1x¼ and over.....6½c
1x3-16 ⅞x3-16 and ¼.....7c
1 and 13-16x¼ and 5-32, ¾x3-16 and 5-32.....9c
¾ and ⅝x⅛ and 3-32 and 12g.....10c
Solid safe cast steel.....4c
Three and five ply cast steel.....5c

Agricultural Implement Cast Steel.

Fork and rake, crucible.....4¼
Horse rake steel, cut to lengths, crucible.....5
Hoe, crucible.....5
Corn stalk cutter, beveled.....4½
Beveled hoe and shovel steel, in bars.....4½
Crucible plow steel, in slabs.....4½

Bessemer and Open-hearth.

Spring.....3 c
Spring spiral and taper, cut to lengths.....3½
Tire, 2-16 thick and above.....2½c
Toe calk.....3 c
Plow.....2½c
Axle billets.....2 c
Sleigh shoes.....2½c
Cutter shoe, cut to length and tapered.....3c
Scythe back steel.....3½c
Grain drill bars.....2½c
Grain drill points.....3½c
Rolling coulter blanks, cut and punched.....6c
Thresher Teeth.....3½
Rolled hammer billets.....2½c
Thresher steel.....2½c

Terms.—Four months 3 per cent. discount for cash, if remitted within 30 days.

Rearward Castings.

Furnace floor and straightening plates.....1¼c
Housings and castings not otherwise specified 1¾c
Guide plates.....2½c
Spindles and coupling boxes.....1¾c
Sand rolls and pinions, large size.....2 c
Sand rolls and pinions, small size.....2½c
Pipe mill castings.....3 c
Rolling mill castings under 50lb.....2 c
Spur and bevel wheels, large.....3 c
Spur and bevel wheels, small.....3½c
Pulleys up to 30 inches.....4 c
Pulleys over 30 inches.....3½c
Engine castings, light.....3½c
Engine castings, heavy.....2½c

English Steel.

Best cast.....℔ lb 15c
Extra cast..... 16½@17c
Round machinery..... 10c
Circular Saw Plates..... 14c
Swaged, cast..... 16c
Best double shear..... 18c
Blister, 1st quality..... 14c
German steel, best..... 10c
2d quality..... 9c
3rd quality..... 8c
cet cast steel, 1st quality..... 15½

Boiler Rivets.—"Albany."

½, ⅝, 11-16 and ¾ inches diameter.....4 00
"Standard" ½, ⅝, 11-16 and ¾ inch diam.....4 00

Plumbers,' Steam and Gas Fitters' Supplies.

Grey Iron Fittings.....discount 70
Steam Brass Goods.....discount 65
Water Brass Goods.....discount 60
Galvin Gate Valves.....discount 40
Register Gauge Cocks..... net 50
Steam Gauges.....discount 40
Steam Gauges 5 inches net dial per doz 24 00
Scotch Glass Tubes.....discount 75
Tools.....Special
Soil Pipe & Fittings, Mott's List.....discount 50

PIPE, WROUGHT.

Standard Wrought Iron Lap Welded Steam and Gas Pipe.

	Inside Diameter. Inches.	Weight Per Foot.	Price Per Foot Black.	Price Per Foot Galvan'd	Thickness Inches.
Butt-Welded.	⅛	24	0 03½		.068
	¼	42	0 03½	0 05	.088
	⅜	56	0 03½	0 05½	.091
	½	84	0 04¾	0 06	.109
	¾	1 12	0 06	0 08	.113
	1	1 67	0 08	0 10½	.134
	1¼	2 24	0 11	0 14	.140
Lap Welded.	1½	2 68	0 21	0 24	.145
	2	3 61	0 26	0 30	.154
	2½	5 74	0 42	0 47	.204
	3	7 54	0 55	0 62	.217
	3½	9 00	0 67	0 83	.226
	4	10 66	0 83	1 00	.237
	4½	12 24	1 00	1 25	.246
	5	14 50	1 20	1 50	.259
	6	18 76	1 50	2 00	.280
	7	23 27	2 00		.301
	8	28 18	2 75		.322
	9	33 70	3 70		.344
	10	40 06	4 75		.366
	11	45 02	5 75		.375
	12	49 00	6 50		.375
	13	54 00	7 75		.375
	14	58 00	9 00		.375
	15	.....	10 00		.375

Discount, (car load lots) butt-welded ¼ inches to 1¼ inches plain.....45 per cent
Ditto galvanized.....35 per cent
Discounts (car load lots) lap welded 1½ inches to 15 inches plain.....62½ per cent
Ditto galvanized.....45 per cent
Discounts on less than car lots 2½ per cent, less.
Discounts on pipe cut to specified lengths depends on size and waste, ordinarily 5 per cent lower than random.

Boiler Tubes.

Discount.....55 per cent

SCRAP IRON AND OLD METAL

	Net Ton.
No. 1 R. R. wrought scrap	$17 50
No. 1 wrought scrap	16 00
No. 1 Machine cast scrap	12 00
Stove plate (free from burnt iron)	9 50
Grate bars	8 25
Pipes and flues (Clean)	11 00
Tank iron	11 00
Hoop and band iron	10 00
Light sheet iron	9 00
Axle turnings	13 50
Wrought turning (free from cast)	12 00
Wrought iron, oily drillings	11 00
Cast borings	10 00
Malleable iron	9 50
Uncut wrought iron boilers	11 00
Steel boiler plates	13 50
Old iron T rails	gross tons $20 00@20 75
Old steel rails	20 50@21 50
Car wheels	15 50@16 00
Old copper	per lb 7
No. 1. H. red Brass	8½
Heavy yellow brass	6½
Light yellow Brass	6
Scrap Zinc	3
Tea Lead	3
Heavy Lead	3¼

COAL.

WHOLESALE.

Wholesale f. o. b. cars at Cleveland:

Carbon Hill and Monday Creek.....$2 10@2 25
Massillon.....2 50@2 65
Palmyra, lump.....2 75@2 90
Brier Hill.....2 75@3 00
Pittsburgh.....2 25@2 50
Salineville.....2 00@2 25
Tuscarawas.....2 00@2 25
New Hazelton..... 2 00
New Hazelton, mix..... 1 15@1 20
" " nut..... 1 75@1 85
Connotton..... 2 00@2 25
Connotton, mix..... 1 20
" nut..... 1 75@1 85
Anthracite grate..... 4 37
Anthracite egg..... 4 46
Anthracite stove..... 4 87
Anthracite chestnut..... 4 69

RETAIL.—Delivered.

Massillon Lump..... 3 65
" Nut..... 3 40
Carbon Hill and Monday Creek, lump..... 3 50
Carbon Hill and Monday Creek, nut..... 3 25
Straitsville, lump..... 3 40
Straitsville, nut..... 3 15
Palmyra Lump.....3 75@4 00
New Hazelton Lump..... 2 75
New Hazelton Nut..... 2 50
Osnaburg Lump..... 2 75
Osnaburg Nut..... 2 50
75c less on cars by car load.
Anthracite Stove and Chestnut..... 5 75
Egg and grate..... 5 50

OILS.

Pure Oils. Packages included.

Sperm, winter bleached per gal.....1 15@1 20
Whale, winter bleached per gal.....60@65
Straits.....37@40
Bank.....35@38
Lard oil, extra W. S.....53@58
do No. 1 do.....45@48
do No. 2 do.....40@42
Tallow oil.....60@65
Neatsfoot oil, pure.....90@1 00
do No. 1.....65@70
Linseed oil, raw.....46@49
do do boiled.....49@52
Cotton seed oil, white.....47@50
do do yellow.....[illegible]
West Virginia lubricating 28 deg.....10@[illegible]
Paraffine oil, winter pressed.....15@18
Capitol Cylinder..... 35
Model do..... 30
Eldorado Engine..... 23
Turpentine, per gal..... 38
Leader Cylinder..... 70

CITY PLATING WORKS.
BEST WORK.
NICKEL PLATING.
LOWEST PRICES.
106 Canal Street, CLEVELAND, O.

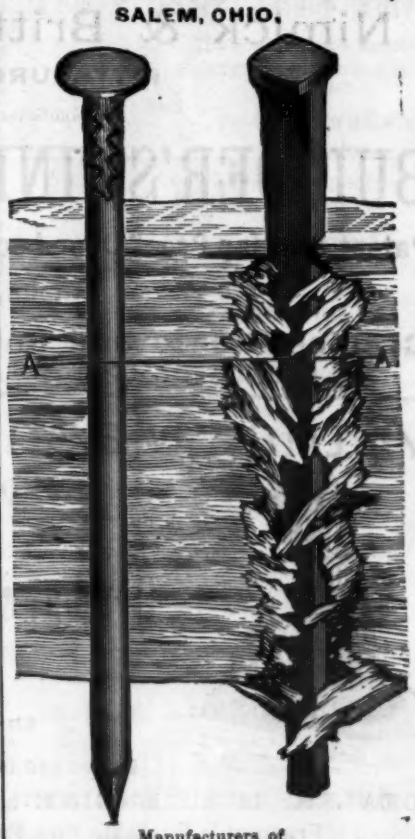
DETROIT LUBRICATOR CO.'S
Sight Feed Lubricator Cups,

for oiling valves and cylinders of steam engines, by the only perfect method, through the steam pipe. The oil passes in sight, drop by drop, into the column of steam, where it vaporizes, thus becoming a steam lubricant, oiling perfectly every part reached by the steam. Saves from 50 to 90 per cent. in oil and wear of machinery, thus paying for itself several times a year. A cup will be sent to responsible parties on 20 days' trial, if desired. In ordering, give diameter of cylinder. We refer to more than 10,000 firms using them.
Address
DETROIT LUBRICATOR CO.,
Office, Cor. Fort and Griswold Sts., Detroit, Mich.
Sole owners of the "sight feed feature," as claimed and used by this Company.
Mention this paper. 84

ARDS, TOWNSEND & CO.
Wholesale Grocers,
AND DEALERS IN
Wines, Liquors and Cigars,
Teas a Specialty.
NOS. 151 & 153 WATER ST.,
CLEVELAND, O.

DO YOUR OWN PRINTING
AND SAVE BIG BILLS, for Economy is an essential element of every business enterprise. Persons unoccupied will find the purchase of a Printing Outfit a most lucrative investment. The profit is so great that an outfit can be paid for in a short time. Any one with ordinary intelligence can do the work. Also amusing and instructive to Boys and Girls. Complete Outfits as low as $5.00. Full instructions accompany each order. Send for circulars and mention this paper.
R. L. ZERBE, 188 W. Fifth St., Cincinnati, O.

The Salem Wire Nail Co.,
SALEM, OHIO.



Manufacturers of
WIRE and WIRE NAILS
HEADQUARTERS FOR PENNY WIRE NAILS.

BARREL, KEG, HOGSHEAD, And Stave Machinery.

E. & B. HOLMES, 54 Buffalo, N. Y.

Holton Iron Roofing Co.,

Successors to W. A. HOOVER & CO.,
Manufacturers of
HOLTON'S PATENT
IMPROVED IRON ROOFING,
"V" edged Crimped Roofing, Siding and Ceiling. Responsible Agents wanted to handle our work in every County in the United States. Send for Circular No. 20 and Prices. NEW LISBON, O. 62

THE ARMSTRONG VERTICAL STEAM ENGINE

WITH HEATER AND STEEL BOILER.

The Best Engine Made

and will furnish MORE POWER with less fuel than any other engine OF SAME SIZE. The only Vertical Engine made having

An All Steel Double Rivetted Boiler.

Those who want an Engine of from TWO to FIFTEEN horse power, should send for our Illustrated Catalogue and Price List.

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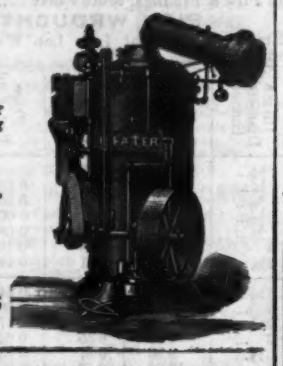

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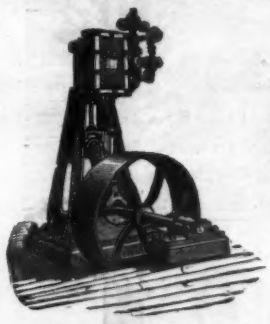

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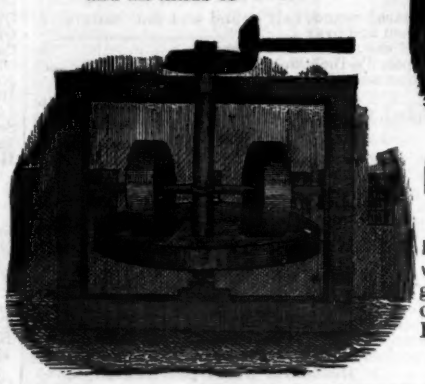

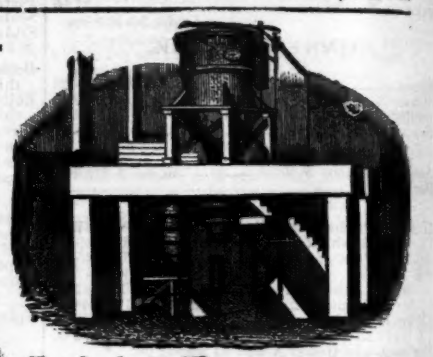

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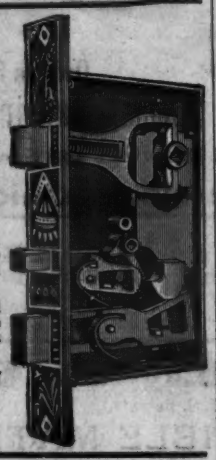

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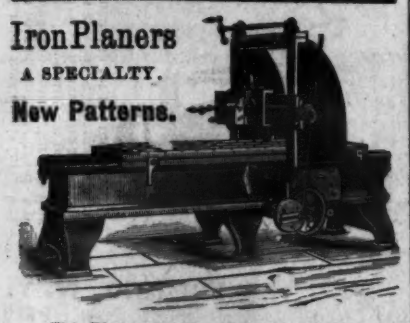

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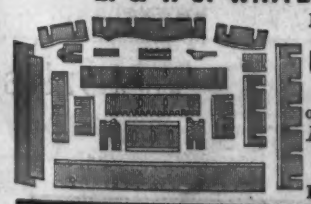

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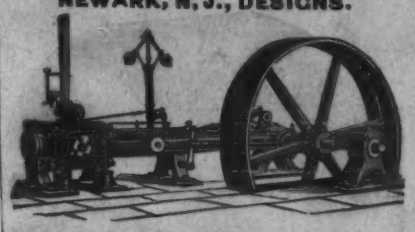

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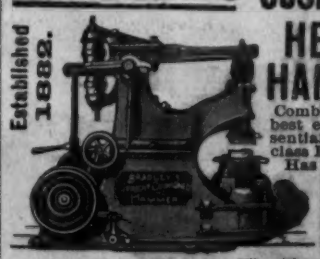

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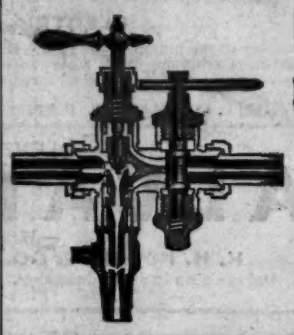

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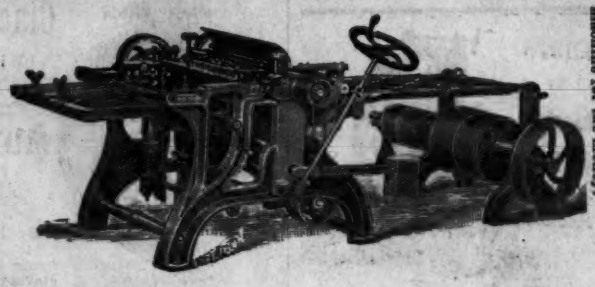

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